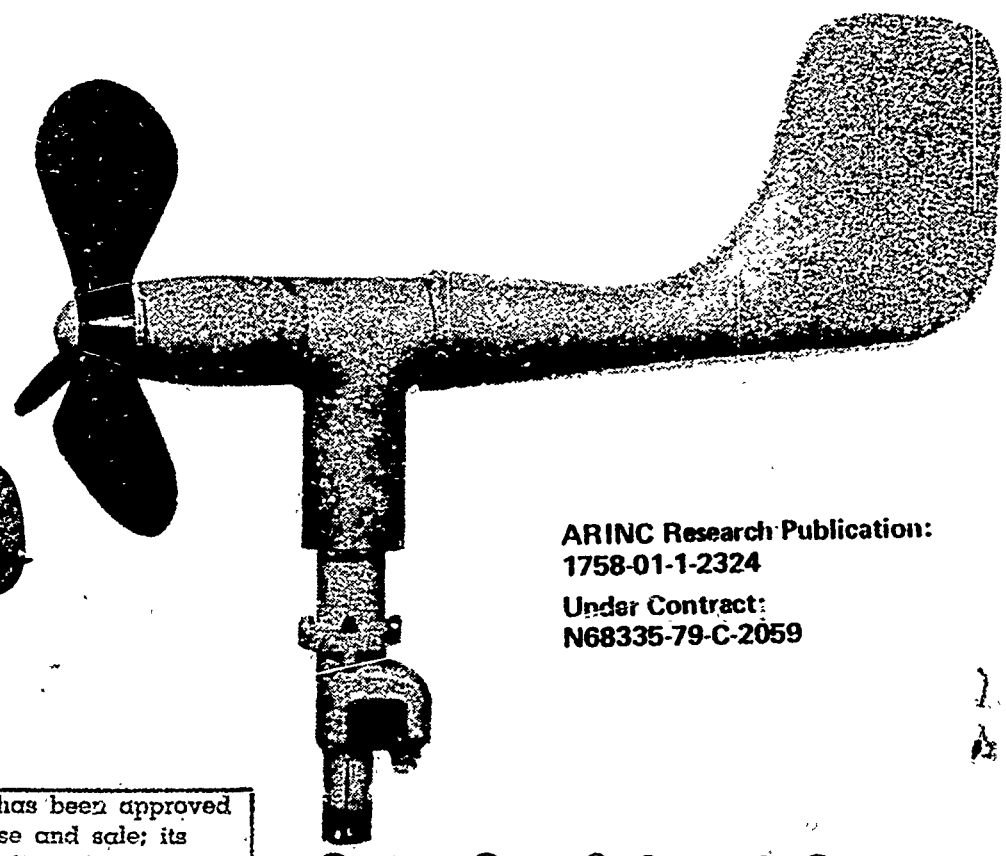
WIND MEASURING AND INDICATING SYSTEM

MAINTENANCE PLAN



ARINC Research Publication:
1758-01-1-2324

Under Contract:
N68335-79-C-2059

NAEC 002-80

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE *(When Data Entered)*

REPORT DOCUMENTATION PAGE

READ INSTRUCTIONS BEFORE COMPLETING FORM

1. REPORT NUMBER (14) 1758-01-1-2324	2. GOVT ACCESSION NO. AD-A096270
3. RECIPIENT'S CATALOG NUMBER	
4. TITLE *(and Subtitle)* (L) Wind Measuring and Indication System Maintenance Plan	5. TYPE OF REPORT & PERIOD COVERED
6. PERFORMING ORG. REPORT NUMBER 1758-01-1-2324	
7. AUTHOR(s) (10) Richard A. Coss	8. CONTRACT OR GRANT NUMBER(s) (15) N68335-79-C-2059
9. PERFORMING ORGANIZATION NAME AND ADDRESS ARINC Research Corporation 2551 Riva Road Annapolis, Md. 21401 (11) 1980	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS (12) 142
11. CONTROLLING OFFICE NAME AND ADDRESS Naval Air Engineering Center Ship & Shore Installations Engineering Dept. Lakehurst, NJ 08733	12. REPORT DATE
	13. NUMBER OF PAGES 105
14. MONITORING AGENCY NAME & ADDRESS *(if different from Controlling Office)*	15. SECURITY CLASS. *(of this report)* Unclassified
	15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT *(of this Report)*

Unlimited

This document has been approved for public release and sale; its distribution is unlimited.

17. DISTRIBUTION STATEMENT *(of the abstract entered in Block 20, if different from Report)*

18. SUPPLEMENTARY NOTES

19. KEY WORDS *(Continue on reverse side if necessary and identify by block number)*

Maintenance Plans

20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

400247 JOB

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE *(When Data Entered)*

MAINTENANCE PLAN

WIND MEASURING AND INDICATING SYSTEM

Naval Air Engineering Center
Ship Installation Engineering Department
Lakehurst, New Jersey 08733

Control Number

NAEC 002-80

Part I - 10 Sep 80

Part II - 10 Sep 80

Part III - 10 Sep 80

MAINTENANCE PLAN
TABLE OF CONTENTS

Designation/Nomenclature	EIC	Cognizant Activity	No.
Wind Measuring and Indicating System	LH07	Naval Air Engineering Center	NAEC 002-80
Part Number	**NSN**	**Prepared by**	
		Ship and Shore Installations Engineering Department, Code 91223	
FSCM Code	**Application**	**Date of Initial Submission**	**Revision Number** / **Date of Revision**
23667	All USN and USCG ships		
SM&R (GSE)	**GSERD Number (GSE)**		

Approved By (Navy)	Title	Date	
G B Bocce	Ship and Shore Installations Engineering Officer	25 Nov 80	Page i

MAINTENANCE PLAN
PART I – GENERAL CONSIDERATIONS

Designation/Nomenclature	EIC	Cognizant Activity	No. NAEC 002-80
Wind Measuring and Indicating System	LH07	Naval Air Engineering Center	
Part Number	NSN	Prepared by	
		Ship and Shore Installations Engineering Department, Code 91223	
FSCM Code	Application All USN and USCG ships	Date of Initial Submission	Revision Number / Date of Revision
23667			
SM&R (GSE)	GSERD Number (GSE)		

Narrative

1.0 Design Description

All Navy and Coast Guard ships are equipped with a wind measuring and indicating system which provides continuous visual indications of wind direction (in degrees) and wind speed (in knots) relative to the ship's bow. The system also provides electrical signals representative of wind direction and speed for computation of flight deck crosswind and headwind conditions, computation of wind vectors for weapon launch systems, and record-keeping by meteorological equipment.

Currently there are approximately 400 active Navy and Coast Guard ships equipped with wind measuring and indicating systems. An additional 91 inactive Navy ships also have wind measuring and indicating systems.

There are two primary types of wind measuring and indicating systems used on ships -- Type B and Type F. Both systems operate by transmission of electrical synchro signals. The function of the Type B system is based on 60 Hz electric power, while the newer Type F system is a 400 Hz system. Equipments making up both the Type B system and the Type F system are manufactured by the Bendix Corporation, Environmental and Process Instruments Division, Towson, Maryland.

A very limited number of ships have yet a third type of wind measuring system. Units making up this system are derived from the AN/UMQ-5 Wind Measuring and Indicating System which is identified and described in NAVAIR 50-30 FR-525. The system is used primarily for land based installations and is under the cognizance of ASO. As such,

Approved By (Navy)	Title	Date	
R B Bozie	Ship and Shore Installations Engineering Officer	11/25/80	Page 1 of 49

Narrative (continued)

there is no APL nor does the system appear on a COSAL. Normally, this system is not used in shipboard installations, and the design of units making up the system is different from the standard Type B and F systems used for shipboard installations. Details of the AN/UMQ-5 system are not covered in this Maintenance Plan; however, individual units making up the system are identified in Appendix A.

The major units making up both the Type B or Type F Wind Measuring and Indicating System include a detector unit, a transmitter unit, and an indicator unit (see Figure 1). On larger ships the system may include a synchro amplifier unit, a crosswind/headwind computer unit and crosswind/headwind indicator unit, and/or a wind direction and speed recorder unit. The wind measuring and indicating equipment application as related to ship classes is discussed in detail in Appendix B.

System operation is dependent upon ship wiring and switching as well as on the individual units that make up the wind measuring and indicating system. Since most ships are equipped with multiple units in their respective wind measuring systems; i.e., starborad and port detectors, and forward and aft transmitters, a selector switch network is provided which permits a choice of units to be used, depending upon the situation.

1.1 Type B Wind Measuring and Indicating System Description

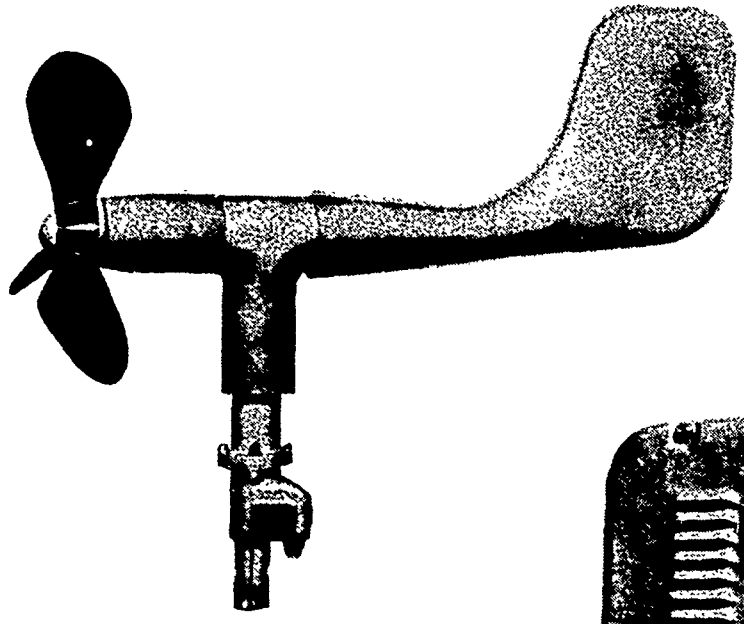
The Type B Wind Measuring and Indicating System provides continuous wind data in terms of direction (HD) and speed (HE) relative to the ship. The equipment employs 60 Hz synchros of the 1F, 1HG, 1HCT, and 5HG types for transmitting and receiving measured wind values.

The wind direction values are transmitted by a synchro that is positioned by the detector unit as it acts in the manner of a wind vane. The angular position of this synchro is received by a synchro in the transmitter unit. The transmitter in turn damps the signal, and damped angular positions are transmitted by a synchro to the indicator unit(s) where wind direction is read out on a continuous circular scale.

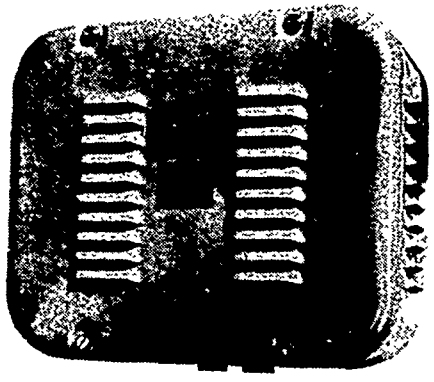
The wind speed values are transmitted from the detector by a synchro, which is driven by the detector's rotor assembly, to a synchro in the transmitter unit. The transmitter measures the rate of rotary motion of the receiving synchro, integrates the signal, and displaces a transmitting synchro angularly a proportionate amount. The transmitting synchro positions the wind speed readout on the indicator unit(s).

The maximum number of receiver (indicators, recorders, headwind/crosswind computers, etc.) that the Type B transmitter unit will accurately drive is limited to nine units.

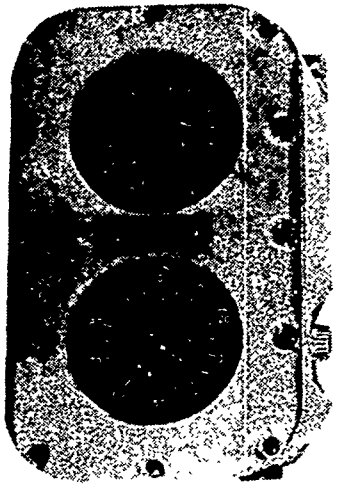
Narrative (continued)



Detector



Transmitter



Indicator

Figure 1. WIND MEASURING AND INDICATING EQUIPMENT, TYPE B

Narrative (continued)

Detailed technical data and specifications on the Type B Wind Measuring and Indicating System are contained in the following Navy documents:

NAVSHIPS 0365-262-5010
MIL-W-15805

1.1.1 Wind Direction and Speed Detector, Type B

The Type B detector unit employs two type 1HG synchros for detecting and transmitting wind direction and speed values to the transmitter unit.

Assemblies and components of the detector may be seen in the exploded view of Figure 2, which shows the detector to be composed of a rotor assembly (1), a speed mechanism assembly (3), a center section assembly (4), a vane assembly (5), a housing and shaft assembly (6), and a vane support assembly (7).

Wind speed is determined by the rotational speed of the rotor assembly. The rotor assembly is held directly into the wind by the vane assembly. The rotor output is geared to the speed synchro, which is located in the speed mechanism assembly. The output of the speed synchro is transmitted to the respective synchro in the transmitter via the collector rings and brushes on the vane shaft subassembly.

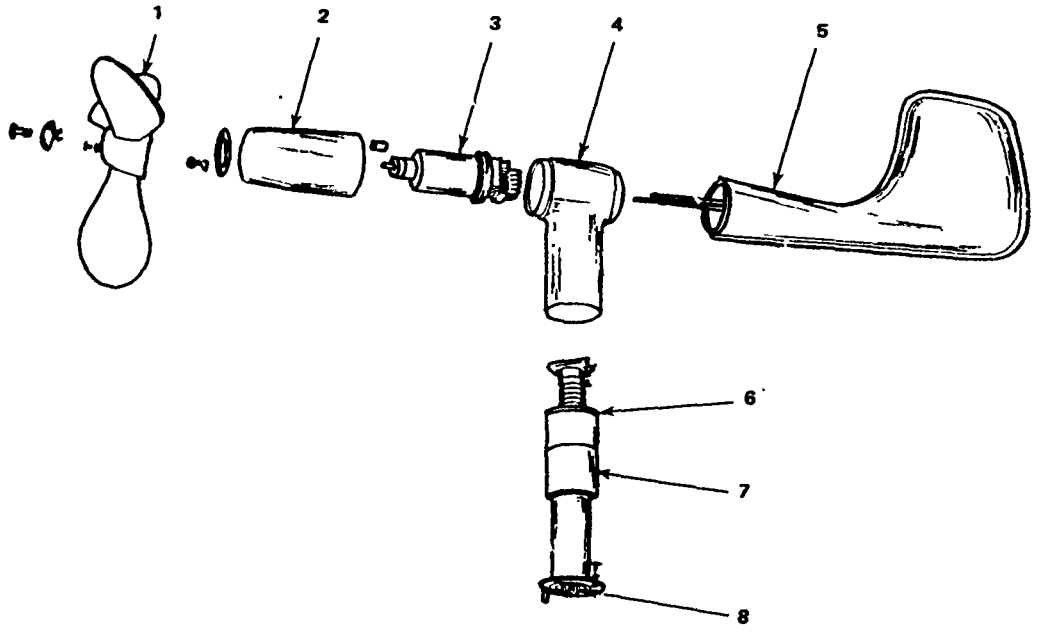
Wind direction is determined by the position of the vane relative to the bow of the ship. The direction synchro is set to electrical zero when the vane points the detector directly to the bow. The direction synchro, which is mounted in the vertical support assembly, has its rotor coupled to the vane via the vane shaft subassembly. As the wind positions the vane, the rotor of the synchro is displaced angularly a like amount. The output of the direction synchro is transmitted to the respective synchro in the transmitter unit.

The vertical support assembly is bolted to the mounting assembly. A dowel pin is provided in the base of the vertical support assembly to maintain detector alignment. A male connector, also located at the base of the vertical support assembly, and a female connector located at the top of the mounting assembly permit removal of the detector unit without disturbing incoming wiring.

1.1.2 Wind Direction and Speed Transmitter, Type B

The Type B transmitter unit consists of two major assemblies: a wind speed assembly and a wind direction assembly (see Figure 3). These assemblies are housed in a common, drip-proof case designed for bulkhead mounting.

Narrative (continued)



1 Rotor Assembly
2 Cover
3 Speed Mechanism Assembly
4 Center Section Assembly
5 Vane Assembly
6 Housing and Shaft Assembly
7 Vane Support Assembly
8 Connector

Figure 2. DETECTOR UNIT, TYPE B (EXPLODED VIEW)

Narrative (continued)

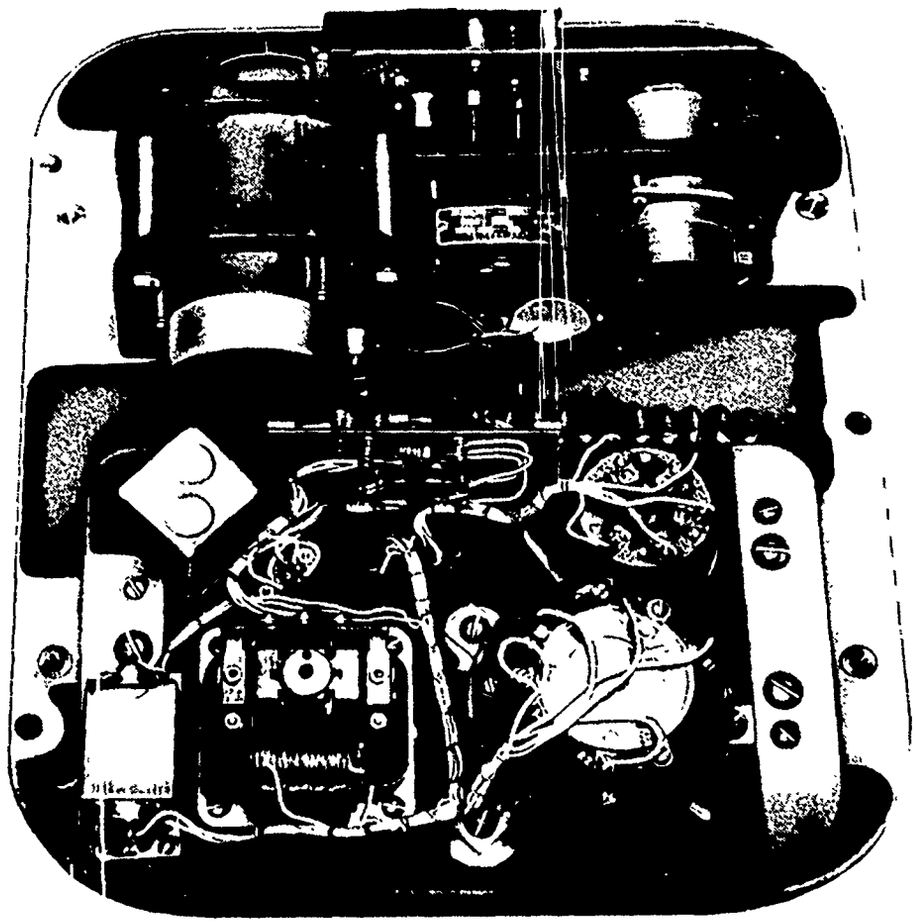


Figure 3. TRANSMITTER UNIT, TYPE B (COVER REMOVED)

Narrative (continued)

The wind direction assembly (see Figure 4) consists of a receiving type 1HCT control-transformer-synchro (5), a servo amplifier subassembly (2), a reversible servomotor (3), and a transmitting type 5HG output synchro (4).

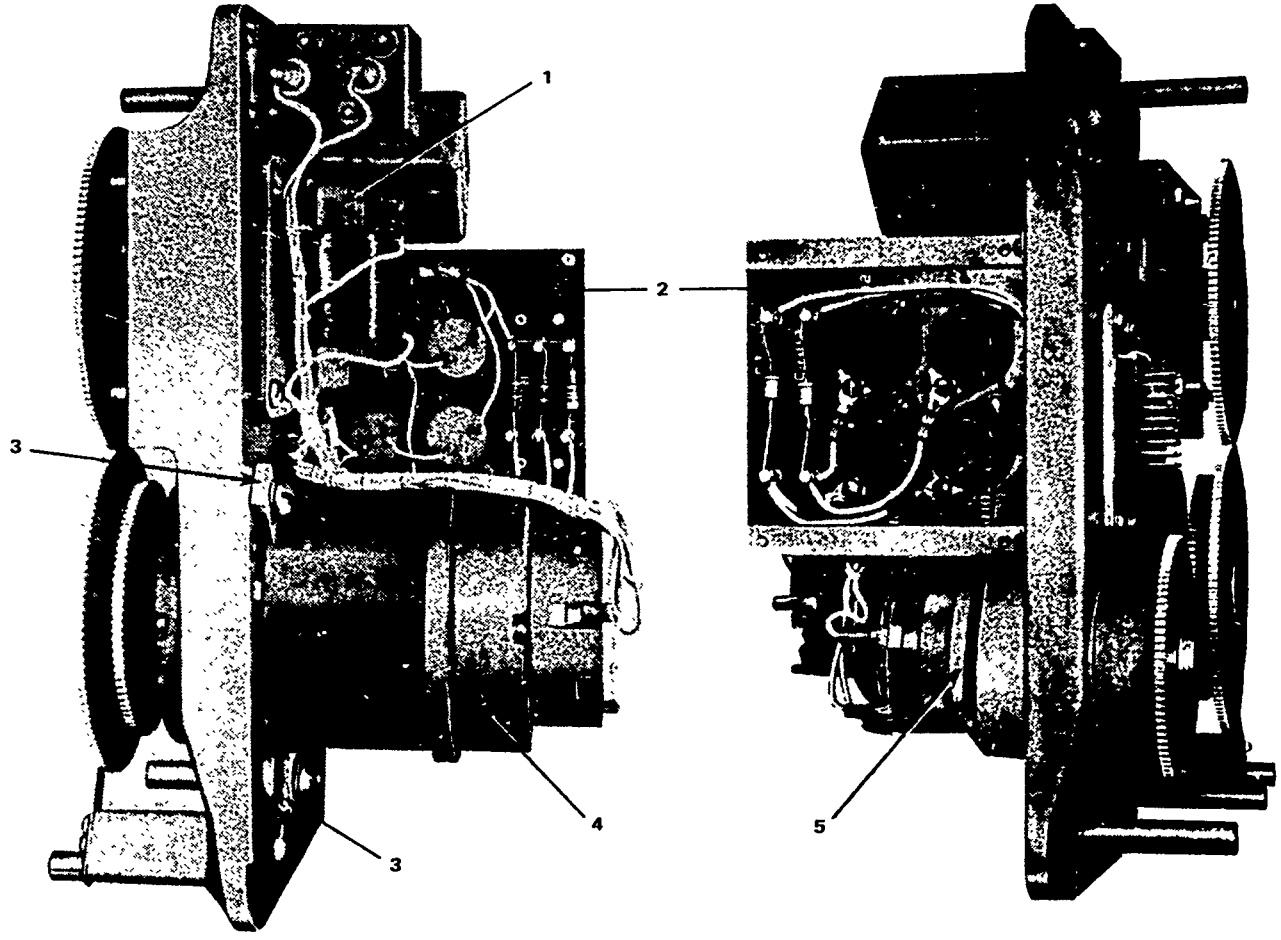
When the detector changes direction, a position signal is transmitted to the control-transformer-synchro. The control-transformer output signal is either in phase or 180° out of phase with the line voltage depending on the direction the detector turned. The output of the control-transformer-synchro is amplified by the servo amplifier, which in turn controls the current flow in the windings of the reversible motor. The direction in which the motor turns is a function of the servo amplifier input phase. As the motor shaft turns, it repositions the rotor of the control-transformer-synchro and the rotor of the type 5HG output synchro through a gear train. When the control-transformer-synchro rotor reaches a null, the reversible motor stops driving. The position of the output synchro rotor is transmitted to the indicator(s)

The wind speed assembly (see Figure 5) consists of a receiving type 1F synchro (4), a roller-disc integrator subassembly (3), a synchronous motor (2), and a transmitting type 5HG synchro (1).

In the speed assembly the receiving synchro receives the detector's speed synchro signal. Translation of this signal is required to convert the rate of synchro rotation into a single angular displacement of the output synchro representative of wind speed. This translation is accomplished by the roller-disc integrator. On the Type B wind speed assembly the input to the integrator roller shaft is driven directly by the receiving synchro via a reduction gear train that terminates with a spiral gear engaging the roller shaft (7). The resulting action drives the roller shaft linearly, moving the roller away from the center of the driving discs (6); however, the roller is rotated by the two driving discs that are driven at a constant speed by a synchronous motor. Thus, the roller shaft is receiving circular and linear motion at the same time. When the circular motion and the linear motion balance each other, the roller will assume a position of displacement from the center of the disc, positioning its shaft laterally proportional to the rotational speed of the receiving synchro. The output end of the roller shaft is a circular rack that engages a pinion gear on the shaft of the transmitting synchro and converts linear motion into angular motion. This angular motion is then transmitted to the receiving synchro of the indicator(s). The transmitting synchro is set to electrical zero when the wind speed is zero.

A sensitive switch (8), activated by the roller shaft, opens the circuit to the synchronous motor when the roller is at the center of the driving discs (near zero wind speed). This reduces wear on piece-parts associated with the discs and drive mechanism.

Narrative (continued)



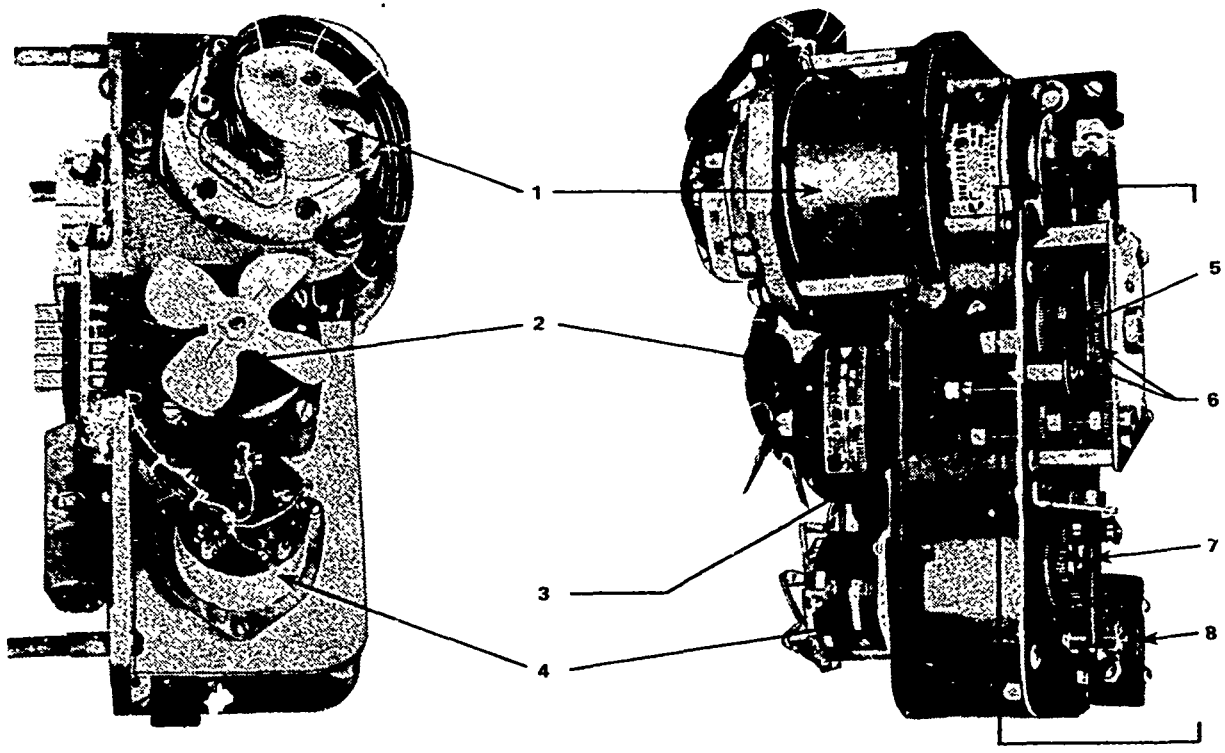
1 Reversible Servomotor
2 Servo Amplifier Subassembly
3 Clamp
4 Type 5 HG Synchro
5 Type 1 HCT Synchro

Figure 4. WIND DIRECTION ASSEMBLY, TYPE B

Wind Measuring and Indicating System
Designation/Nomenclature

NAEC 002-80
Maintenance Plan Number

Narrative (continued)



1 Type 5 HG Synchro
2 Synchronous Motor
3 Roller-Disc Integrator Subassembly
4 Type 1 F Synchro
5 Roller
6 Driving Disc
7 Roller Shaft
8 Sensitive Switch

Figure 5. WIND SPEED ASSEMBLY, TYPE B

Narrative (continued)

The roller-disc integrator subassembly is a complex mechanical mechanism and quite prone to maintenance-induced damage. Alignment and adjustment of the roller shaft is critical; if done incorrectly, it will cause damage to the shaft, excessive wear of discs, binding of the roller-disc integrator mechanism, and subsequent damage to related piece-parts. Untrained and inexperienced personnel should not attempt to disassemble this subassembly without proper supervision.

1.1.3 Wind Direction and Speed Indicator, Type B

The Type B wind direction and speed indicator unit (see Figure 6) is a dual indicator containing two independent assemblies, one for direction and the other for speed. Both assemblies are housed in a watertight case designed for bulkhead mounting. The assemblies are identical with the exception of their graduated dials. Each assembly consists of a type 1F synchro that receives position signals from the respective transmitter synchros in the transmitter unit. Pointers, fastened to the rotor shafts of the synchros, indicate wind direction and wind speed on separate circular dials. The dials are red-illuminated, and a light-intensity control knob is provided on the side of the case.

1.2 Type F Wind Measuring and Indicating System Description

The functional operation and physical configuration of equipments making up the Type F Wind Indicating and Measuring System is very similar to the Type B system. The primary difference between the two systems is that the Type F system is primarily a 400 Hz system; however, outputs from the Type F transmitter unit include both 400 Hz and 60 Hz synchro wind speed and direction signals.

Synchros used in the Type B wind measuring and indicating equipment have limitations relative to the number of receivers they can handle. The physical size of 60 Hz synchros used in the Type B system dictates the capability of the end design. As previsouly mentioned, the Type B equipment will accommodate only nine indicators or comparable units. The Type F system will handle twenty-four 400 Hz receivers and thirteen 60 Hz receivers. The equipment employs 400 Hz synchros of the 18CX4, 18CT4 and 31TRX4 types, and 60 Hz synchros of the 18TRX6 and 37TRX6 types.

Wind Measuring and Indicating System
Designation/Nomenclature

NAEC 002-80
Maintenance Plan Number

Narrative (continued)

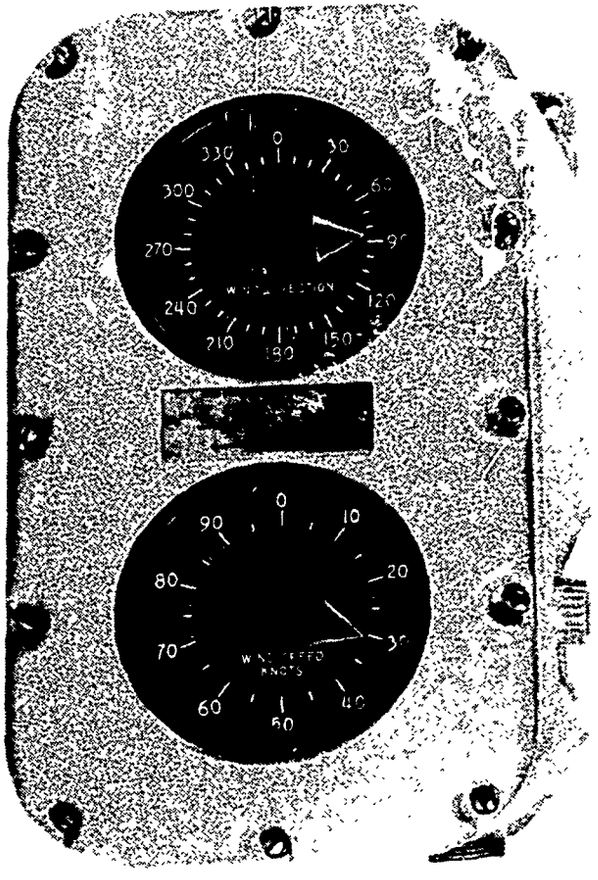


Figure 6. INDICATOR UNIT, TYPE B

Narrative (continued)

Detailed technical data and specifications on the Type F Wind Indicating and Measuring System are contained in the following Navy documents:

NAVSHIPS 0965-108-9010
MIL-W-22900

1.2.1 Wind Direction and Speed Detector Type, F

The Type F detector unit (see Figure 7) employs two type 18CX4 synchros for detecting and transmitting wind direction and speed values to the transmitter unit. Examination of Figure 7 reveals that the external appearance of the Type F detector unit is identical to the Type B detector. In addition to external appearance, the Type F and Type B units are physically interchangeable; however, they are not electrically compatible and will not function properly if interchanged. Placement of a Type F detector in a Type B system will result in destruction of the Type F detector.

Assemblies and components of the Type F detector unit are shown in Figure 8. Examination of the figure reveals that the configuration of the Type F unit is virtually the same as that of the Type B. The rotor assemblies for the Type B and Type F are the same.

The functional operation of the Type F detector unit is identical to that of the Type B unit.

1.2.2 Wind Direction and Speed Transmitter, Type F

The Type F transmitter unit consists of two major assemblies: a wind speed assembly and a wind direction assembly (see Figure 9). Although there are minor configuration differences between the respective assemblies in the two detector types, their functional operation is the same. Both the wind speed and wind direction assemblies used in the Type F transmitter are plug-in assemblies (see Figure 10). Each assembly consists of a closed-loop servo amplifier system, and in the wind speed assembly the servo amplifier is augmented by a roller-disc integrator to translate the speed signal.

The wind direction assembly consists of a receiving type 18CT4 control-transformer-synchro, a magnetic amplifier subassembly, a servomotor, and type 31TX4 (400 Hz) and 37TX6 (60 Hz) transmitting synchros.

Narrative (continued)

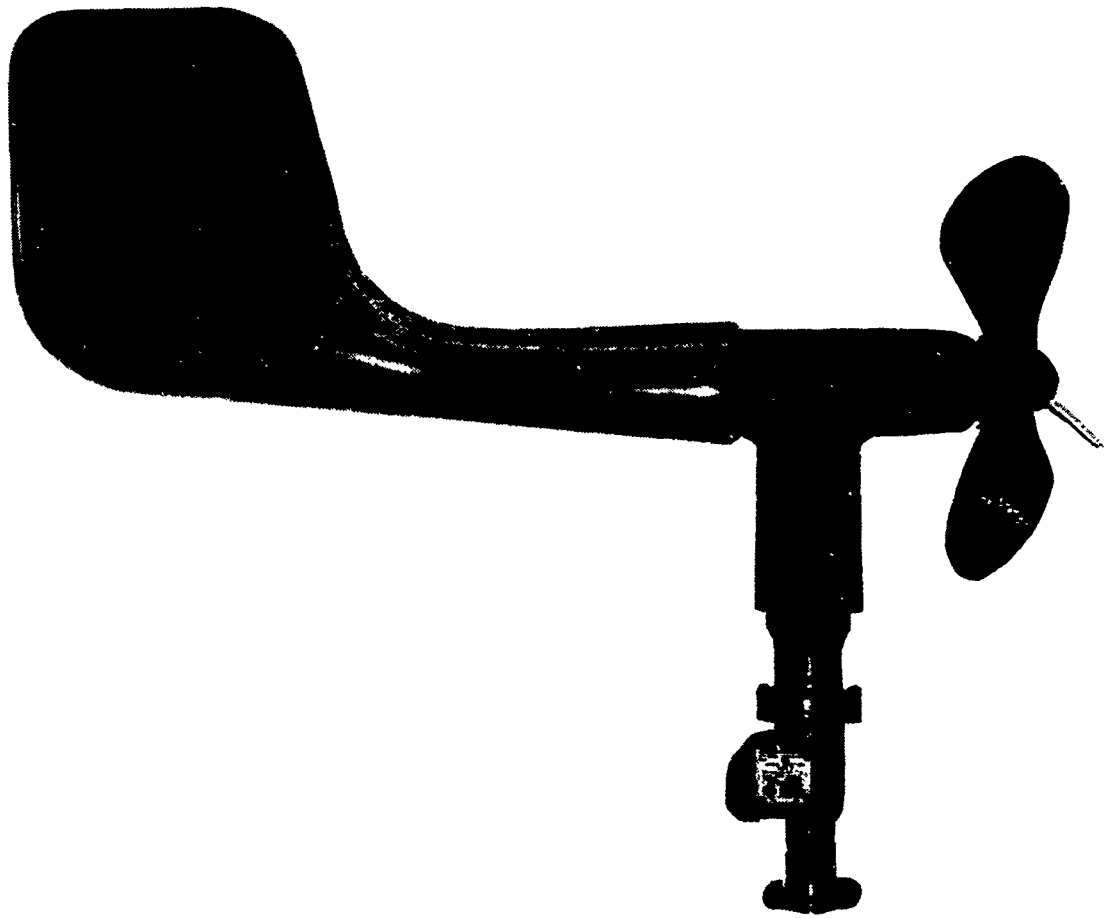
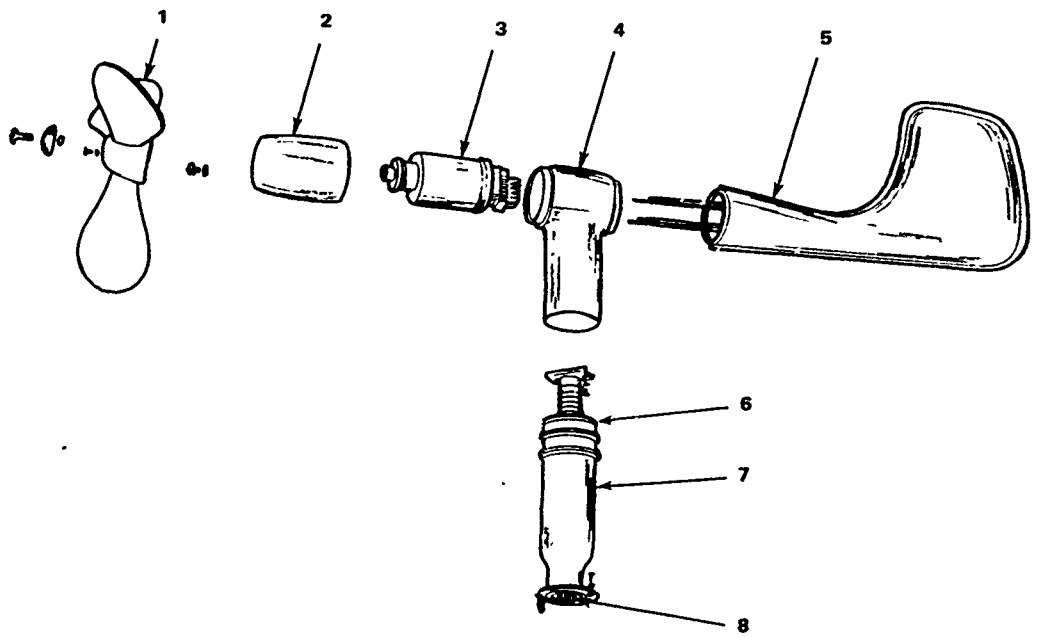


Figure 7. DETECTOR UNIT, TYPE F

Narrative (continued)



1 Rotor Assembly
2 Cover
3 Speed Mechanism Assembly
4 Center Section Assembly
5 Vane Assembly
6 Housing and Shaft Assembly
7 Vane Support Assembly
8 Connector

Figure 8. DETECTOR UNIT, TYPE F (EXPLODED VIEW)

Narrative (continued)

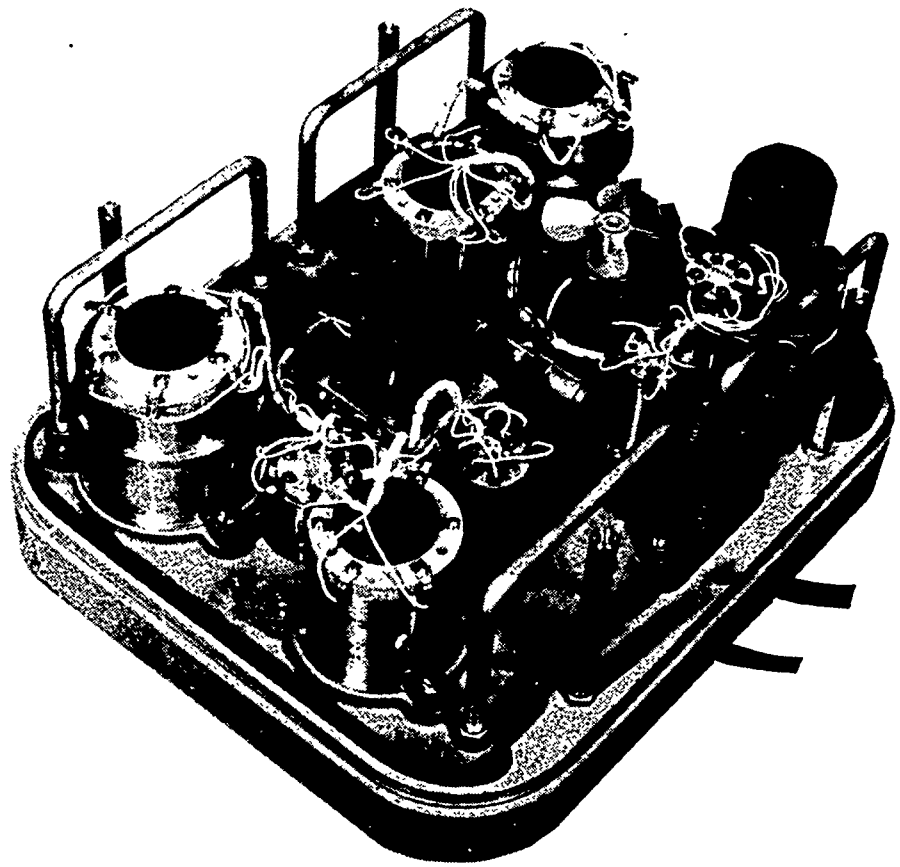


Figure 9. TRANSMITTER UNIT, TYPE F (COVER REMOVED)

Narrative (continued)

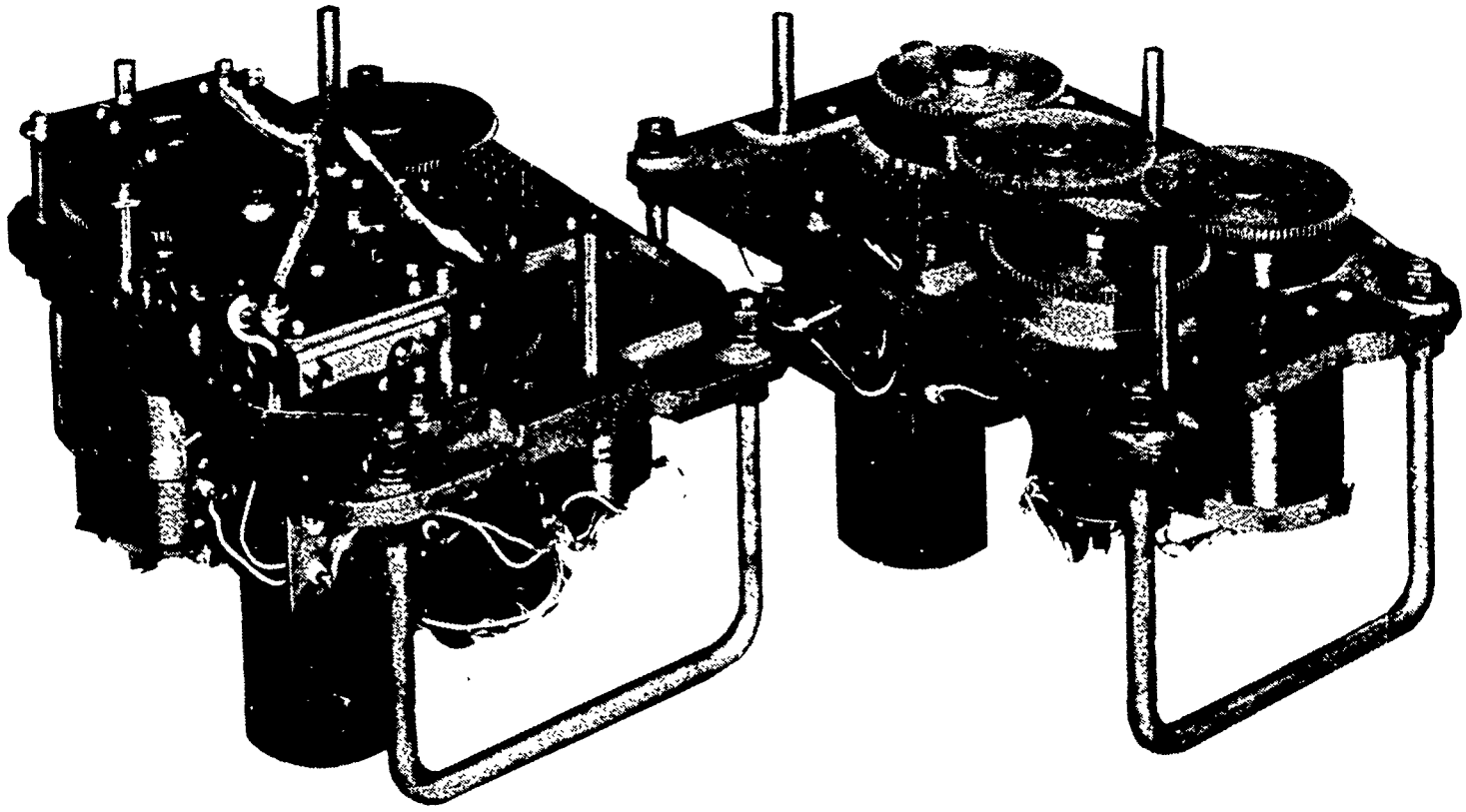


Figure 10. WIND SPEED AND DIRECTION PLUG-IN ASSEMBLIES

Narrative (continued)

The major components and subassemblies of the wind speed assembly include a type 18CT4 control-transformer-synchro, an encapsulated magnetic amplifier subassembly, a synchronous motor, a roller-disc integrator subassembly, and type 31TRX4 (400 Hz) and 37TRX6 (60 Hz) transmitting synchros.

The Type F system requires both 60 Hz and 400 Hz single phase electric power. A relay installed on the wind speed assembly provides protection for the roller-disc integrator subassembly in the event 60 Hz power is lost during operation, or in the event 400 Hz power is activated prior to 60 Hz power.

1.2.3 Wind Direction and Speed Indicator, Type F

The Type F Wind Indicating and Measuring System is capable of operating with the Type B indicator and Type F indicators. There are two kinds of Type F indicators: the F/60, which is designed for 60 Hz operation (see Figure 11); and the F/400*, which is a 400 Hz unit.

Both Type F indicators are identical in configuration with the exception of their receiving synchros. The F/60 unit employs two 18TRX6 synchros for wind direction and speed inputs, while the F/400 indicator employs 18TRX4 synchros.

The Type F indicator unit consists of a single assembly that contains both the wind direction and wind speed synchros. The wind direction and speed assembly is housed in a watertight case designed to be bulkhead-mounted. The dials are red-illuminated and can be rotated 90° to accommodate horizontal or vertical mounting. The Type B indicator does not have dials that can be repositioned and therefore must be mounted vertically only.

1.3 Crosswind/Headwind Computer and Crosswind/Headwind Indicator Description

The crosswind/headwind computer unit and crosswind/headwind indicator unit (see Figure 12) are used in conjunction with the Type B and Type F Wind Measuring and Indicating Systems. The computer and indicator units provide indications of crosswind and headwind speeds with respect to the straight flight deck and the angle flight deck of an aircraft carrier. The computer functions from a 60 Hz power source and input signals.

* The F/400 Indicator was never officially procured by the Navy.

Narrative (continued)

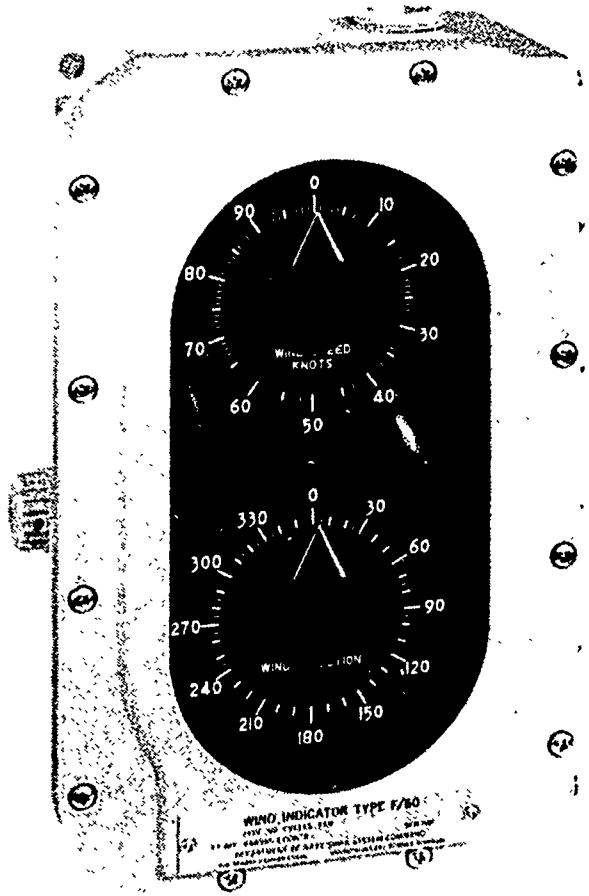
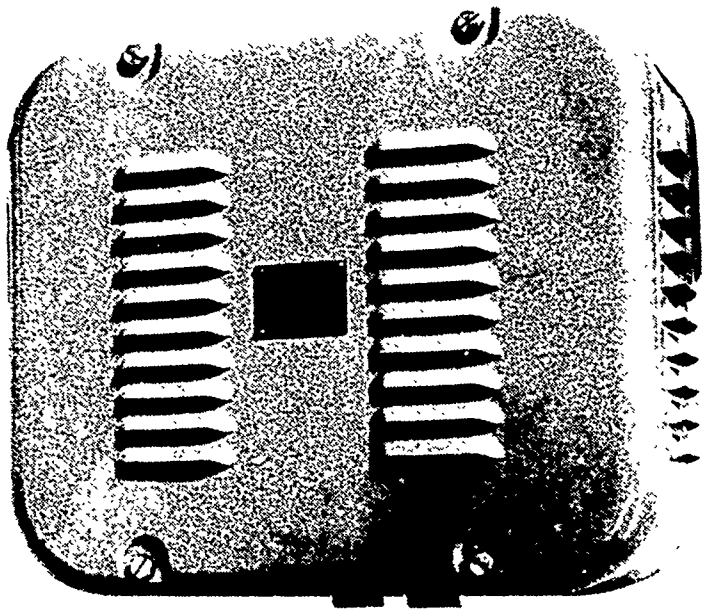
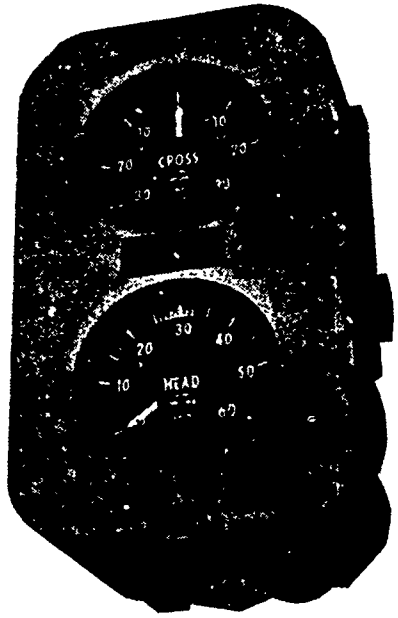


Figure 11. INDICATOR UNIT, TYPE F/60

Narrative (continued)



Computer



Indicator

Figure 12. CROSSWIND/HEADWIND COMPUTER AND CROSSWIND/HEADWIND INDICATOR UNITS

Narrative (continued)

The crosswind/headwind computer unit contains a wind speed circuit, a wind direction circuit, and a dc power supply. Actual components and subassemblies of the computer consist of two identical servo amplifier subassemblies (speed and direction), two reversible servo motors, two receiving type 1HCT control-transformer-synchros, a sine/cosine potentiometer, a precision linear potentiometer, and a dc power supply subassembly.*

Wind speed and direction are received from the Type B or F transmitter unit and applied to the computer's wind speed and direction circuits. The wind speed circuit positions the precision linear potentiometer. The output voltage of the precision linear potentiometer is proportional to the speed of wind and is applied as excitation to the sine/cosine potentiometer. The wind direction circuit positions the sine/cosine potentiometer, which in turn provides the output voltages representative of the crosswind (sine) and headwind (cosine) components of the speed of the wind.

The sine/cosine potentiometer contains four stacked sections; two sections are for the sine/cosine functions of angle deck signals and two sections are for the sine/cosine function of the straight deck signals. The two sections are angularly displaced from each other by 10 degrees, the same angular displacement that exists between the aircraft carrier's straight deck and angle deck.

The sine/cosine potentiometer output crosswind/headwind voltages are applied to two crosswind/headwind indicator units -- one representative of the straight deck, the other representative of the angle deck. Both of the crosswind/headwind indicators are identical, and each consists of an assembly containing two microammeter movements -- one for reading out crosswind, the other for headwind.

The crosswind meter movement is calibrated for plus and minus 25 microamperes full-scale deflection from zero center, which corresponds to a range of plus and minus 30 knots from zero center, in one-knot increments on the dial.

---

*With the exception of the potentiometers, components and subassemblies associated with the wind direction and wind speed servo systems are the same as those used in the Type B transmitter wind direction servo system.

Narrative (continued)

The headwind meter movement is calibrated for 50 microamperes full scale deflection, which corresponds to a range of 0-60 knots, in one-knot increments on the dial.

The dials are red-illuminated, with a light-intensity control knob on the side of the case. The assemblies are housed in a watertight case designed for bulkhead mounting.

Detailed technical data on the crosswind/headwind computer unit and crosswind/headwind indicator unit are contained in the following Navy document:

NAVSHIPS 365-2815

1.4 Wind Direction and Speed Recorder, Type B

The Type B wind direction and speed recorder unit (see Figure 13) is used in conjunction with the Type B and Type F Wind Indicating and Measuring Systems. The unit is a dual pen recorder that simultaneously produces, in separate channels, inked traces indicating wind direction and wind speed values on a continuous paper chart. The recorder operates from a 60 Hz power source and input signals.

The recorder unit consists of a wind direction assembly, a wind speed assembly, an electrical zero circuit, a chart drive assembly, and a chart guide-pen lift assembly.

The wind direction assembly (see Figure 14) consists of a type 1F synchro coupled via a gear train to a recording pen and pen-repositioning mechanism. Ink is carried from an ink tank through a tube to the pen point by capillary action. The repositioning mechanism consists of a reversible induction motor, a limit switch, relays, a slip ring, and a commutator. The reversible induction motor is formed by a disc coupled to the shaft of the synchro and two fixed coils.

The wind speed assembly (see Figure 15) basically consists of a type 1F synchro coupled by gears to a recording pen and is identical to the wind direction assembly.

An electrical zero circuit is provided so that the electrical zero setting of the synchros may be checked whenever desired.

Narrative (continued)

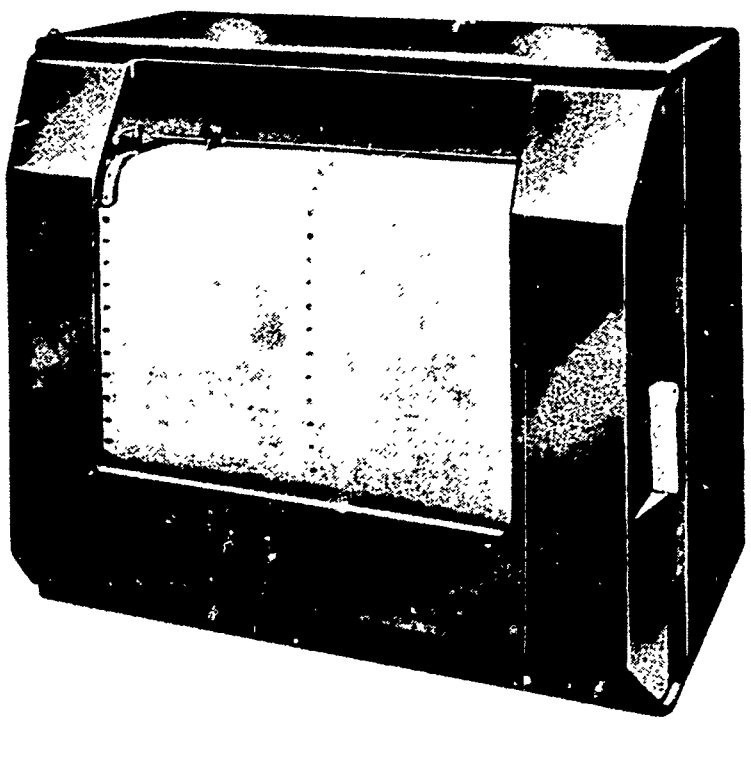


Figure 13. WIND DIRECTION AND SPEED RECORDER UNIT, TYPE B

Narrative (continued)

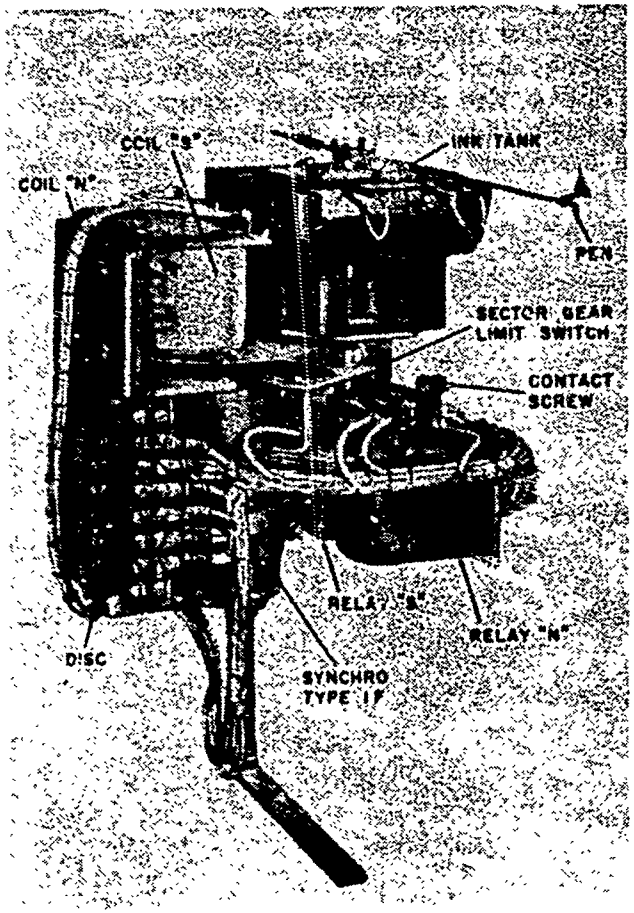


Figure 14. WIND DIRECTION ASSEMBLY

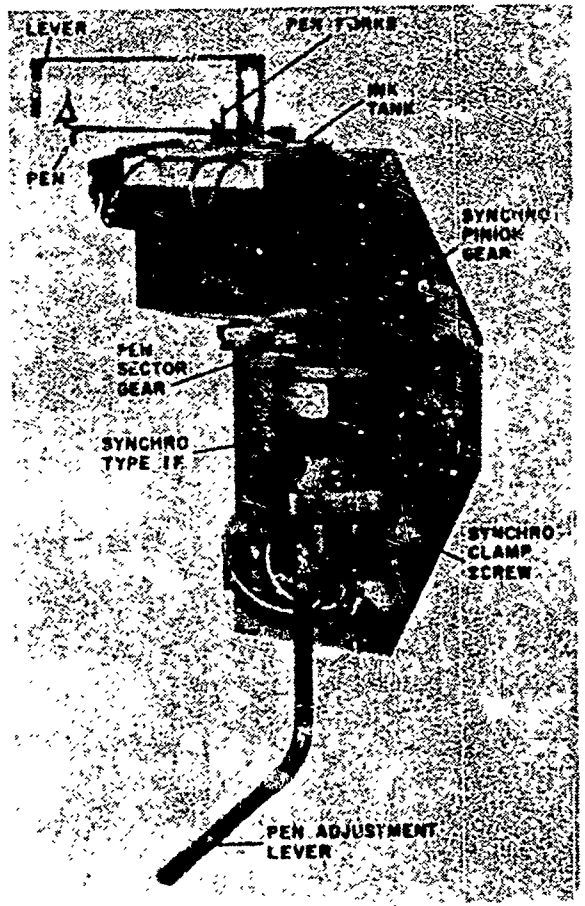


Figure 15. WIND SPEED ASSEMBLY

Narrative (continued)

The chart drive assembly (see Figure 16) is a removable self-contained electromechanical assembly. The chart is propelled by a sprocket-type drive roll powered by a synchronous motor through a gear train. The chart is rewound on a removable reel that is powered by a stall torque motor. Change gears are provided so that the speed of the chart may be varied. Change gears not in use are mounted on the side of the assembly.

The chart guide-pen lift assembly is an assembly that guides the chart across the drive roll, holds the chart drive assembly in place, and provides a mounting for the illuminating lamps. The chart guide-pen lift assembly is pivoted so that it may be lifted up to gain access to the chart drive and ink tanks, and lift the pens off the charts.

Detailed technical data on the wind direction and speed recorder unit are contained in the following Navy document:

NAVSHIPS 365-2761

1.5 Synchro Signal Amplifier

Larger combatant ships, particularly aircraft carriers, have requirements to drive more receivers than the wind direction and speed transmitter is capable of accommodating. To enable a transmitter unit to drive this increased quantity of indicators, computers, recorders, etc., the outputs of the transmitter unit are coupled to a synchro signal amplifier unit. Typically two synchro amplifiers are used in conjunction with a single transmitter, one for wind direction and the other for wind speed.

Synchro signal amplifiers are essentially master repeaters used to increase the capacity of a synchro signal transmission. The synchro amplifier unit accepts a synchro signal from a remote transmitting synchro and, through use of a servo system, aligns its own output transmitting synchros with the input and retransmits the signal to other equipment. Since the unit uses larger output synchros, the capacity for synchro signal transmission is increased. Also, since the output synchros are positioned by a mechanical gear train, the output synchros are electrically isolated from the input signal and may operate from an independent power supply of a different frequency. Hence, 400 Hz signals can be converted to 60 Hz, and vice versa.

Wind Measuring and Indicating System
Designation/Nomenclature

NAEC 002-80
Maintenance Plan Number

Narrative (continued)

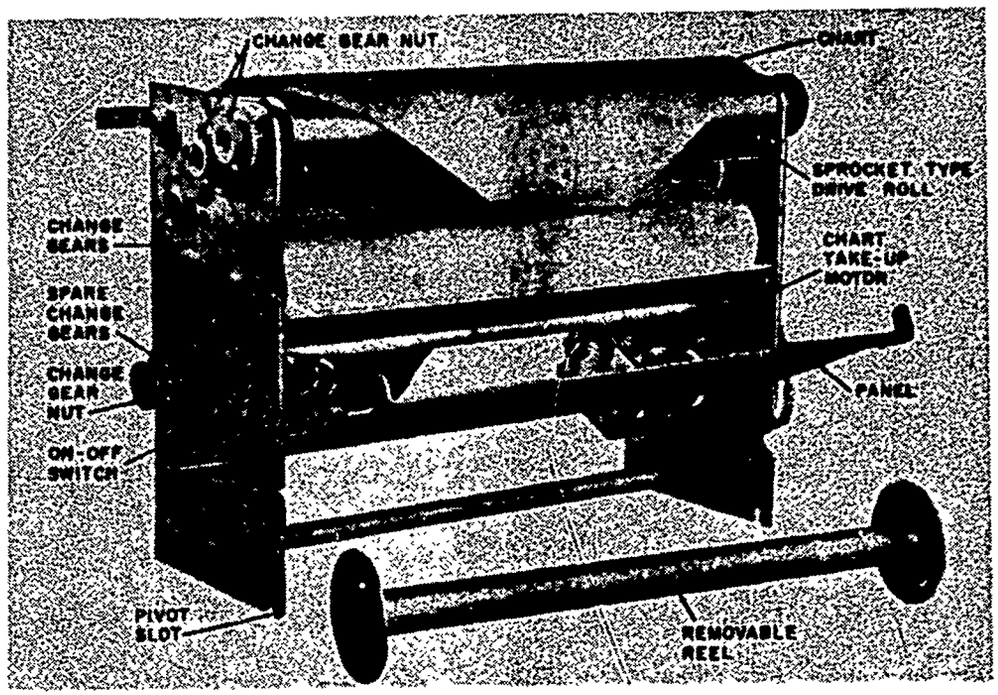


Figure 16. CHART DRIVE ASSEMBLY

Narrative (continued)

The wind measuring and indicating system does not include a synchro signal amplifier unit in its normal equipment complement and there is no amplifier specifically dedicated for operation with the system. Consequently a specific synchro amplifier cannot be identified in this Maintenance Plan.

There are three general types of synchro signal amplifier units -- Type A, Type E, and Type F -- all similar in function and external appearance. The major difference is that the Types A and E units are for operation with 60 Hz supply and input signals, and the Type F unit is for operation with 400 Hz supply and input signals. Each of the synchro signal amplifiers consists of internal assemblies housed in a drip-proof case designed for bulkhead mounting. The internal assemblies are accessible for maintenance through a hinged front access door, which can be opened by loosening captive screws in the door. The access door folds down to the horizontal position and may be used as a maintenance platform for the internal assemblies. An alarm switch, a dial window, and indicator lights are provided on the front access door.

Several different types of synchro signal amplifier units are employed with the wind measuring and indicating equipment. Typical manufacturers of the synchro signal amplifier include Henschel, RCA, and Sperry. Many of these units are quite old using vacuum tube electronic circuits, while some of the newer units have solid-state circuits. Some of the synchro signal amplifier units recently or currently employed with the wind measuring and indicating system aboard aircraft carriers are Type A and Type E units including the Mk 2, Mod 1; Mk 7, Mods 2A and 4A; and Mk27, Mods 7, 7A, 8, and 8D.

1.6 Control Panels and Selector Switches

The multiplicity of units making up wind measuring and indicating system installations on various ships necessitates an arrangement to alternately select, at will, different specific units. For example, in the event of damage to the aft interior communications (IC) compartment, it is necessary to use units located in the forward IC compartment; or if the ship is running with winds off the starboard, the starborad detector should be used. To facilitate this selection requirement, a switching network employing selector switches (and overload/blown fuse indicators to monitor system status) is used. There are numerous switching network arrangements for the many ships employing wind indicating and measuring equipment. Usually, ships of a given class have similar switching networks. On aircraft carriers the selector switching network is distributed between the aft IC compartment, the forward IC compartment, and the bridge. The primary control panel is located in the aft IC compartment, the forward IC has a secondary control panel, and detector selection is controlled from the bridge.

Narrative (continued)

It is significant to note that many ships do not have a simplified diagram showing the wind indicating and measuring system switching network arrangement. As a result, ship's personnel may not be aware that the selector switch arrangement could cause adverse conditions by placing too many receivers on one transmitter. If a ship's wind system selector switching network is configured in a manner that would permit the operation of more than nine receivers on a Type B transmitter or thirteen 60 Hz receivers on a Type F transmitter*, the ship's personnel responsible for operation of the system must be aware of the limitations associated with the selector switching network.

2.0 Maintenance Plan Summary

This Maintenance Plan identifies primary maintenance requirements as a function of the maintenance level (organizational, intermediate, and depot) for the Type B and Type F Wind Measuring and Indicating System, including units, assemblies, subassemblies, and major components of the system. In addition, the support equipment that facilitates meeting these maintenance requirements is identified (see Appendix C), as are all repairable units, assemblies, subassemblies, and components (see Part II). The Maintenance Plan does not include related units that are not designated as part of the wind indicating and measuring system, i.e., units not identified by equipment identification code (EIC) LH07.

Equipment or units making up the wind indicating and measuring system are operated and maintained aboard ship by organizational-level personnel.

Maintenance on the wind measuring and indicating equipment is divided into two categories, scheduled and corrective, and is conducted at three levels ranging from the organizational level, through the intermediate level, to the depot level. Each maintenance level is authorized to perform the maintenance for which it is normally responsible as well as that which is authorized for lower levels. Maintenance at all levels is basically the same for both the Type B and Type F Wind Indicating and Measuring Systems.

A discussion of the current wind indicating and measuring system maintenance philosophy is presented in Appendix D.

---

* The Type F transmitter can also accommodate up to twenty-four 400 Hz receivers.

Narrative (continued)

2.1 Organizational-Level Maintenance

Organizational-level maintenance includes all maintenance performed aboard ship by ship's personnel. Organizational-level maintenance of the wind indicating and measuring system will be performed by Navy personnel rated as Interior Communications Electricians (IC) on all classes of ships.

2.1.1 Scheduled Maintenance

Scheduled or PMS maintenance actions at the organizational level include cleaning, inspection, lubrication, alignment and adjustment, and operational and functional testing of units making up the wind indicating and measuring system. Specific scheduled maintenance requirements are listed individually in Part III.

2.1.2 Corrective Maintenance

Corrective maintenance at the organizational level consists of operational and functional tests, fault isolation, and unit repair by assembly, subassembly, component, or piece-part replacement; and assembly repair by subassembly, component, or piece-part replacement. In some instances repair will be limited to removal and replacement only. Specific corrective maintenance requirements are listed individually in Part III.

2.1.3 Operational Calibration

An additional function accomplished at the organizational level, with the assistance of CAFSU personnel, is operational calibration. This takes into consideration the interface between the wind measuring and indicating equipment and intrinsic characteristics of the individual ship installation.

The operational calibration is, basically, a functional check of the wind measuring and indicating system, while under way, to check its performance in conjunction with the ship's individual inherent characteristics. The primary purpose of this calibration is to identify and define differences between actual and indicated free stream wind flow. Operational calibration of the wind measuring and indicating equipment is particularly important for aircraft carriers (CVs) and similar amphibious assault ships responsible for aircraft operations, (i.e., LHAs and LPHs). The test is accomplished with special anemometers calibrated by NBS. The anemometers are mounted 37.5 feet above the flight deck on a standard portable mast, which is affixed to attachment points on either the starborad or port side of the forward flight deck. These data are particularly critical to aircraft carriers in the sector of 340° to 10° relative to the bow. Data obtained during the operational calibration are used as the basis for providing correction factors so that the actual wind direction will be known.

Narrative (continued)

The data are used to develop correction curves in graphic form and to offset differential synchros, which accommodate wind direction correction for individual detector installations.

Operational calibration is a one-time requirement for each ship unless significant structural changes occur that are suspected of changing air flow in the vicinity of the detectors. As such, the operational calibration is not considered as either a scheduled or corrective maintenance requirement.

2.2 Intermediate-Level Maintenance

Intermediate-level maintenance of the wind measuring and indicating equipment will be performed at shore-based intermediate maintenance activities (SIMAs) and afloat aboard tenders. SIMAs currently responsible for repair of wind measuring and indicating equipment are located as follows: Charleston, Little Creek, Mayport, Pearl Harbor, and San Diego. Authorized maintenance will be performed by IC electricians.

2.2.1 Scheduled Maintenance

Although the intermediate level maintenance activity is authorized to perform those tasks involved with scheduled maintenance on the wind indicating and measuring equipment, it is not intended that scheduled maintenance be accomplished at the intermediate level.

2.2.2 Corrective Maintenance

Corrective maintenance at the intermediate level consists of unit test and fault isolation to the component or piece-part level, and repair by component or piece/part replacement. Also, repairable subassemblies, and components that are beyond the capability of repair at the organizational level will be repaired by replacement of defective piece-parts. Disposition (condemnation/salvage) will be provided for items that cannot be repaired.

2.3 Depot-Level Maintenance

Depot-level maintenance of the wind measuring and indicating equipment includes Class B repair or overhaul, and calibration of all end items, including units, repairable assemblies, subassemblies, and components coded for depot repair or found to be beyond the capability of intermediate maintenance activities.

Narrative (continued)

Depot calibration consists of adjusting and aligning the wind measuring equipment to standardized specifications so that any unit or plug-in assembly may be integrated into a wind measuring system and operate in an accurate and precise manner without degrading system performance. Depot calibration requires a "hot bench" with units and assemblies of the wind measuring system available and maintained as "secondary standards". Each end item to be repaired and calibrated will be incorporated into the remainder of the system (the "secondary standards") and adjusted and aligned accordingly.

No scheduled maintenance is planned for the depot level, although the depot is authorized to accomplish tasks associated with scheduled maintenance.

Navy depot facilities designated for repair and overhaul of wind measuring and indicating equipment are: Norfolk Naval Shipyard and Long Beach Naval Shipyard.

3.0 Maintenance Plan Rationale

This Maintenance Plan and the maintenance requirements set forth herein are generally in accordance with the provisions of OPNAVINST 4790.2, OPNAVINST 4790.4, COMNAVSURFPACINST 4700.1, COMNAVSURFLANTINST 9000.1, and Data Item Description UDI-L-21013. Some deviations were required as the result of administrative differences between NAVAIRSYSCOM and NAVSEASYSCOM and difference in the provisioning procedures used by SPCC.

Two of the more obvious deviations pertain to the use of an EIC (Equipment Identification Code) in place of the standard WUC (Work Unit Code) commonly used, and the use of the BRF (Best Replacement Factor)* in lieu of the

* The provisioning of spares aboard ship by SPCC is accomplished using a quantitative index called a Best Replacement Factor (BRF). The BRF represents the experienced yearly demand rate for an item. Should the BRF equal or exceed 0.25 for a vital item or piece/part of a vital next higher assembly, the item will normally be provisioned aboard ship.

Narrative (continued)

GRF (Gross Removal Factor) by ASO used for spares provisioning. NAVSEASYSCOM does not use the WUC for indentured breakdown identification of equipment installed in surface ships. The EIC identifies the system with a four-character code, LH07 for the wind measuring and indicating system; however, no further indentured identification occurs below the system level. The EIC/IDs* assigned in Part II of this plan have been extended to a maximum of seven characters to facilitate an indentured breakdown. Since the wind measuring and indicating system comprises equipment that has been in service for many years, usage data are not provided in Part II with the exception of assemblies or subassemblies that must be procured that were not previously identified as integral items. In these instances estimated BRFs are provided until such time as actual Fleet usage data are available. In all other cases, current Fleet usage data apply and these data can be obtained through SPCC or from FMSO.

* The indentured equipment identification code (EIC/ID) consists of the four-character EIC followed by a three-character identification code to facilitate an indentured breakdown similar to the WUC structure used by Naval Aviation. The EIC/ID is for reference purposes and should not be confused with the ships' equipment installation/location code which is also a multiple-character extension of the EIC.

MAINTENANCE PLAN
PART II – REPAIR CAPABILITY

Designation/Nomenclature	EIC	Cognizant Activity	No. NAEC 002-80
Wind Measuring and Indicating System	LH07	Naval Air Engineering Center	
Part Number	NSN	Prepared by: Ship and Shore Installations Engineering Department, Code 91223	
FSCM Code: 23667	Application: All USN and USCG ships	Date of Initial Submission	Revision Number / Date of Revision
SM&R			

EIC/ID	NSN/Part Number	Nomenclature	SM&R Code	FSCM	Demil. Code	Basis No. 3 BRF	Basis No. ___ MRF	Basis No. ___ ISR	Basis No. ___ RPF
	Wind Measuring and Indicating Equipment, Type B								
LH07/1	4A 6660 00-943-7221	Detector Unit, Type B (1)*	PA22D			1.671			
	1132730-1			23667	A				
	ALT NSN & P/N								
	4A 6660 00-691-1528 1132730B	(2)		23667	A				
LH07/11	NSN TBD 49412-1	Speed Mechanism Assy	PB22D	23667	A	FLEET USAGE DATA APPLI			
LH07/111	1H 0000 LL-CD9-1996	Synchro Housing Sub-assy	XA22D						
	1132695-1			23667	A				

Approved By (Navy)	Title	Date	
[signature]	Ship and Shore Installations Engineering Officer	25 Nov 80	Page 32 of 49

*Footnotes appear at the end of Part II (Page 38).

MAINTENANCE PLAN

PART II – REPAIR CAPABILITY (continued)

Wind Measuring and Indicating System
Designation/Nomenclature
Repairable Items

NAEC 002-80
Maintenance Plan Number

EIC/ID	NSN/Part Number	Nomenclature	SM&R Code	FSCM	Demil. Code	Basis No. 3 BRF	Basis No. ___ MRF	Basis No. ___ ISR	Basis No. ___ RPF
LH07/12	NSN TBD 1132794-1	Housing and Shaft Assy	PB22D 23667	A					
LH07/121	9G 6660 00-713-5586 512558-1	Shaft Housing Subassy	PB22D 23667	A					
LH07/13	9G 6660 00-713-5584 49394-1	Mounting Assy	PB222 23667	A		FLEET USAGE DATA APPLY			
LH07/2	4A 6660 00-691-1529 1132735C ALT NSN & P/N 4A 6660 00-557-3417 R875K2	Transmitter Unit, Type B (3) (4)	PA22D 23667 23667	A A					
LH07/21	1H 0000 LL-CG0-4200 516643-1	Housing Assy	PD22D 23667	A					
LH07/22	1H 0000 LL-CD9-2002 1132735SH2	Wind Direction Assy	PB22D 23667	A		0.481			
LH07/221	1H 0000 LL-CD9-2014 1132838-1	Amplifier Subassy, Servo	PA2GD 23667	A		0.247			
LH07/23	NSN TBD 1132735SH3	Wind Speed Assy	PB22D 23667	A		1.221			
LH07/231	NSN TBD P/N TBD	Integrator Subassy, Roller-Disc	PA2GD 23667	A		0.892			
LH07/3	4A 6660 00-691-1530 1132775B	Indicator Unit, Type B (5)	PA22D 23667	A		FLEET USAGE DATA APPLY			

MAINTENANCE PLAN

PART II – REPAIR CAPABILITY (continued)

Wind Measuring and Indicating System
Designation/Nomenclature
Repairable Items

NAEC 002-80
Maintenance Plan Number

EIC/ID	NSN/Part Number	Nomenclature	SM&R Code	FSCM	Demil. Code	Basis No. 3 BRF	Basis No. ___ MRF	Basis No. ___ ISR	Basis No. ___ RPF
LH07/3	ALT NSN & P/N								
	4A 6660 00-530-0851	(6)							
	514045D			23667	A				
LH07/31	1H 0000 LL-CG0-2639	Housing Assy	PD222			FREE USAGE DATA APPLY			
	514206-1			23667	A				
LH07/32	NSN TBD	Wind Speed Assy/ Wind Direction Assy (7)	PB22D						
	P/N TBD			23667	A				
	Wind Measuring and Indicating Equipment, Type F								
LH07/4	4A 6660 00-926-1324	Detector Unit, Type F (8)	PA22D			0.920			
	1135924LESSPC39			23667	A				
	ALT NSN & P/N								
	4A 6660 00-080-0411	(9)							
	1135924			23667	A				
	3331250			80064	A				
LH07/41	NSN TBD	Speed Mechanism Assy	PB22D						
	P/N TBD			23667	A				
LH07/411	NSN TBD	Synchro Housing Sub-assy	XA22D						
	P/N TBD			23667	A	FREE USAGE DATA APPLY			
LH07/42	NSN TBD	Housing and Shaft Assy	PB22D						
	P/N TBD			23667	A				
LH07/43	NSN TBD	Mounting Assy	PB222						
	P/N TBD			23667	A				

MAINTENANCE PLAN

PART II – REPAIR CAPABILITY (continued)

Wind Measuring and Indicating System
Designation/Nomenclature
Repairable Items

NAEC 002-80
Maintenance Plan Number

EIC/ID	NSN/Part Number	Nomenclature	SM&R Code	FSCM	Demil. Code	Basis No. 3 BRF	Basis No. ___ MRF	Basis No. ___ ISR	Basis No. ___ RPF
LH07/5	4A 6660 00-080-0412	Transmitter Unit, Type F	PA22D						
	1135925			23667	A				
	1135925E			23667	A				
	3351251			80064	A				
LH07/51	NSN TBD	Housing Assy	PD22D						
	516643-1			23667	A				
LH07/52	1H 0000 LL-CD9-2276	Wind Direction Assy	PB22D			0.404			
	1135925SH2			23667	A				
LH07/53	NSN TBD	Wind Speed Assy	PB22D			1.598			
	1135925SH3			23667	A				
LH07/531	NSN TBD	Integrator Subassy, Roller-Disc	PA2GD			0.830			
	P/N TBD			23667	A				
LH07/6	4A 6660 00-447-1932	Indicator Unit, Type F/60	PA22D						
	1148959-1			23667	A				
LH07/61	NSN TBD	Housing Assy	PD222						
	1148620			23667	A				
LH07/62	NSN TBD	Wind Speed and Direction Assy	PB22D						
	P/N TBD			23667	A				
	Crosswind/Headwind Computer and Indicator								
LH07/7	4A 6660 00-088-7376	Computer Unit, Crosswind/Headwind	PA22D						
	1136631	(12)		23667	A				
	1136631E			23667	A				
	3331266			80064	A				

Wind Measuring and Indicating System
Designation/Nomenclature
Repairable Items

NAEC 002-80
Maintenance Plan Number

EIC/ID	NSN/Part Number	Nomenclature	SM&R Code	FSCM	Demil. Code	Basis No. 3 BRF	Basis No. ___ MRF	Basis No. ___ ISR	Basis No. ___ RPF
LH07/71	1H 0000 LL-CD9-2454	Chassis Assy	PD2GD						
	1136631SH2			23667	A				
	3331266SH2			80064	A				
LH07/711	1H 0000 LL-CD9-2014	Amplifier Subassy, Servo (13)	PA2GD				[illegible]		
LH07/712	1H 0000 LL-CD9-2502	DC Power Supply Subassy	PA2GD			0.222			
	1137177			23667	A				
LH07/8	4A 6660 00-088-7377	Crosswind/Headwind Indicator Unit (14)	PA22D						
	1135513D			23667	A				
LH07/81	1H 0000 LL-CD9-2264	Housing Assy	PD222						
	1135752			23667	A				
LH07/82	NSN TBD	Crosswind/Headwind Assy	PB22D				[illegible]		
	P/N TBD			23667	A				
LH07/821	1H 0000 LL-CD9-2262	Microammeter, Crosswind	PA2GG						
	1135743			23667	A				
LH07/822	1H 0000 LL-CD9-2261	Microammeter, Headwind	PA2GG						
	1135742			23667	A				
	Wind Direction and Speed Recorder						[illegible]		
LH07/9	4A 6660 00-853-1923	Recorder, Wind Direction and Speed, Type B (15)	PA22D						
	75795			23667	A				
	75795A			23667	A				

MAINTENANCE PLAN

PART II — REPAIR CAPABILITY (continued)

Wind Measuring and Indicating System
Designation/Nomenclature

NAEC 002-80
Maintenance Plan Number

Repairable Items

EIC/ID	NSN/Part Number	Nomenclature	SM&R Code	FSCM	Demil. Code	Basis No.___ BRF	Basis No.___ MRF	Basis No.___ ISR	Basis No.___ RPF
LH07/91	1H 0000 LL-CG0-4774 517505-5	Wind Direction Assy	PA22G	23667	A				
LH07/92	1H 0000 LL-CD9-2950 1142880-1	Wind Speed Assy	PA22G	23667	A				
LH07/93	1H 0000 LL-CG0-4392 516937-1	Chart Drive Assy	PA22G	23667	A				

Wind Measuring and Indicating System
Designation/Nomenclature
Repairable Items

NAEC 002-80
Maintenance Plan Number

FOOTNOTES

(1) APL 381510034

(2) Same as detector unit NIIN 00-943-7221 with mounting assembly.

(3) APL 381510035

(4) APL 381510002 -- a limited number of these units remain in use; however, this transmitter unit is obsolete and has been discontinued -- for replacement use NIIN 00-691-1529.

(5) APL 381510036 -- although a significant number of these units remain in use, this indicator unit is obsolete and has been discontinued -- for replacement use NIIN 00-447-1932.

(6) APL 381510004 -- a limited number of these units remain in use; however, this indicator unit is obsolete and has been discontinued -- for replacement use NIIN 00-447-1932.

(7) The type B indicator contains two plug-in assemblies, a wind speed assembly and a wind direction assembly, both of which are identical with the exception of the dial face.

(8) APL 381510065

(9) Same as detector unit NIIN 00-926-1324 with mounting assembly.

(10) APL 381510066

(11) APL 381510070 -- type B indicator units may be used with the 60 Hz output of the type F transmitter unit.

(12) APL 381510064

(13) Two identical servo amplifiers are used in the crosswind/headwind computer unit, one for wind direction and the other for wind speed. These servo amplifiers are the same assemblies as EIC/ID LH07221.

(14) APL 381510063

(15) APL 381510060

MAINTENANCE PLAN
PART III – MAINTENANCE REQUIREMENTS

Designation/Nomenclature	EIC	Cognizant Activity	No.
Wind Measuring and Indicating System	LH07	Naval Air Engineering Center	NAEC 002-80
Part Number	**NSN**	**Prepared by** Ship and Shore Installations Engineering Department, Code 91223	
FSCM Code 23667	**Application** All aircraft-compatible USN and USCG Ships	**Date of Initial Submission**	**Revision Number** / **Date of Revision**

Req. Number	Requirement	Maint. Level	Interval	GSE Requirement
	SCHEDULED MAINTENANCE			
	Organizational-Level			
001S	Perform an overall system functional check using the built-in-test unit to verify proper operation of units and the switching network. On ships not equipped with built-in-test perform the functional check using the NAEC portable test unit.	0	R	See Table 1*
002S	Perform port and starboard detector unit wind speed and direction comparison check.	0	S	Stopwatch
003S	Check the detector unit installation for corrosion and the rotor and vane for freedom to rotate.	0	S	See Table 2
004S	Clean, inspect, lubricate, and test the operation of the detector unit in accordance with the applicable MRC.	0	S	See Table 2
005S	Clean, inspect, lubricate, and test the operation of the transmitter unit in accordance with the applicable MRC.	0	S	See Table 2
006S	Clean, inspect, lubricate, and test the operation of the indicator unit in accordance with the applicable MRC.	0	A	See Table 2

* Support equipment tables are in Appendix C.

Approved By (Navy)	Title	Date	
[signature]	Ship and Shore Installations Engineering Officer	25 Nov 80	Page 39 of 49

Wind Measuring and Indicating System — Designation/Nomenclature

NAEC 002-80 — Maintenance Plan Number

Req. Number	Requirement	Maint. Level	Interval	GSE Requirement
007S	Clean, inspect, lubricate, and test the operation of the headwind/crosswind computer unit in accordance with the applicable MRC.	0	S	See Table 2
008S	Clean, inspect, and test operation of the crosswind/headwind indicator unit in accordance with the applicable MRC.	0	S	See Table 2
009S	Clean, inspect, lubricate, and test the operation of the wind speed and direction recorder unit in accordance with the applicable MRC.	0	Q	See Table 2
	Intermediate and Depot-Level Both intermediate and depot-level maintenance personnel are authorized to perform tasks involved with scheduled maintenance; however, it is not intended that scheduled maintenance be accomplished by intermediate or depot maintenance activities.			

Wind Measuring and Indicating System
Designation/Nomenclature

NAEC-002-80
Maintenance Plan Number

Req. Number	Requirement	Maint. Level	Interval	GSE Requirement
	CORRECTIVE MAINTENANCE			
	Organizational Level			
001C	Fault isolate system malfunction to the defective unit.	0	N/A	See Table 3
	Detector Unit, Type B and F			
002C	Verify that detector unit is defective and fault isolate to the defective assembly, subassembly, or component.	0	N/A	See Table 4
003C	Repair the detector unit by removing and replacing the faulty subassembly or component.	0	N/A	Common Hand Tools
004C	Align the detector unit as required and verify the repair by functionally testing the unit.	0	N/A	See Table 4
005C	Provide disposition for repairable assemblies, subassemblies, or components removed to facilitate repair of the detector (forward to IMA or depot via supply system).	0	N/A	None
	Transmitter Unit, Type B and F			
006C	Verify that the transmitter unit is defective by performing a speed and direction test.	0	N/A	See Table 4
007C	If the wind direction assembly is found to be defective, fault isolate to the faulty subassembly or component; i.e., synchro, servo amplifier or servomoter.	0	N/A	See Table 4
008C	Repair the wind direction assembly by removing and replacing the faulty subassembly or component.	0	N/A	Common Hand Tools
009C	Align the wind direction assembly as required and verify the repair by functionally testing the assembly.	0	N/A	See Table 4

MAINTENANCE PLAN

Wind Measuring and Indicating System **PART III – MAINTENANCE REQUIREMENTS (continued)**

Designation/Nomenclature **Maintenance Plan Number**

Req. Number	Requirement	Maint. Level	Interval	GSE Requirement
010C	If the wind speed assembly is found to be defective, fault isolate to the faulty subassembly or component; i.e., synchro, servo or magnetic amplifier, servomotor, synchronous motor, or roller-disc integrator.	0	N/A	See Table 4
011C	Repair the wind speed assembly by removing and replacing the faulty subassembly or component. NOTE: No attempt shall be made to disassemble or repair the roller-disc integrator at the organizational-level of maintenance.	0	N/A	Common Hand Tools
012C	Align and adjust the wind speed assembly as required and verify the repair by functionally testing the assembly.	0	N/A	See Table 4
013C	Provide disposition for repairable assemblies, subassemblies or components removed to facilitate repair of the transmitter (forward to IMA or depot via the supply system). Indicator Unit, Type B or F/60	0	N/A	None
014C	Verify that the indicator unit is defective and fault isolate to the defective assembly or component.	0	N/A	See Table 4
015C	Repair the indicator unit by removing and replacing the faulty assembly or component.	0	N/A	Common Hand Tools
016C	Align the indicator unit as required and verify the repair by functionally testing the unit.			See Table 4
017C	Provide disposition for repairable assemblies or components removed to facilitate repair of the indicator (forward to IMA or depot via the supply system.	0	N/A	None

MAINTENANCE PLAN

PART III – MAINTENANCE REQUIREMENTS (continued)

Wind Measuring and Indicating System
Designation/Nomonclature

NAEC 002-80
Maintenance Plan Number

Req. Number	Requirement	Maint. Level	Interval	GSE Requirement
	Crosswind/Headwind Computer Unit			
018C	Verify that the crosswind/headwind computer unit is defective and fault isolate to the faulty assembly, subassembly or component.	O	N/A	See Table 4
019C	Repair the crosswind/headwind computer unit by adjusting and aligning or removing and replacing the faulty subassembly or component; i.e., synchros, servo amplifier, servomotor, dc power supply, linear potentiometer or sine/cosine potentiometer.	O	N/A	See Table 4
020C	Align and adjust the computer unit as required and verify the repair by functionally testing the unit.	O	N/A	See Table 4
021C	Provide disposition for repairable subassemplies or components removed to facilitate repair of the computer (forward to IMA or depot via the supply system).	O	N/A	None
	Crosswind/Headwind Indicator Unit			
022C	Verify that the wind speed indicator unit is defective and fault isolate to the faulty subassembly or component.	O	N/A	See Table 4
023C	Repair the wind speed indicator unit by removing and replacing the faulty component.	O	N/A	Common Hand Tools
024C	Verify the repair by functionally testing the unit.	O	N/A	See Table 4
	Wind Direction and Speed Recorder			
025C	Verify that the wind direction and speed recorder is defective and fault isolate to the faulty assembly, subassembly, or component.	O	N/A	See Table 4

Req. Number	Requirement	Maint. Level	Interval	GSE Requirement
026C	Repair the recorder by removing and replacing the faulty assembly or component; i.e., wind speed assembly, wind direction assembly, chart drive assembly or synchros.	O	N/A	Common Hand Tools
027C	Verify the repair by functionally testing the unit.	O	N/A	See Table 4
028C	Provide disposition for repairable assemblies or components removed to facilitate repair of the recorder (forward to IMA or depot via the supply system).	O	N/A	None
	Wind Measuring and Indicating Equipment, General			
029C	If it is determined that a unit or major assembly is beyond the capability of being repaired at the organizational level (by ship's personnel) the subject item should be turned over to supply for disposition (forwarded to IMA or depot).	O	N/A	None
	Intermediate-Level Maintenance			
	Detector Unit, Type B and F			
030C	Fault isolate detector unit to defective assembly or subassembly.	I	N/A	See Table 5
031C	Fault isolate defective assembly or subassembly to faulty component or piece/part.	I	N/A	See Table 5
032C	Repair assembly or subassembly by removing and replacing the faulty component or piece/part. During the repair process inspect adjacent piece/parts for excessive wear, corrosion, pitting, friction or other failure mechanism that could indicate impending failure.	I	N/A	Common Hand Tools
033C	Align the assembly or subassembly as required and reinstall into the detector.	I	N/A	See Table 5

Wind Measuring and Indicating System — **Designation/Nomenclature**

NAEC 002-80 — **Maintenance Plan Number**

Req. Number	Requirement	Maint. Level	Interval	GSE Requirement
034C	Check interface with unit, align or adjust overall unit as required and verify repair by functionally testing the detector.	I	N/A	See Table 5
035C	Provide disposition for repairable components.	I	N/A	None
	Transmitter Unit, Type B and F			
036C	Fault isolate transmitter unit to defective assembly or subassembly.	I	N/A	See Table 5
037C	Fault isolate defective assembly or subassembly to faulty component or piece/part.	I	N/A	See Table 5
038C	Repair assembly or subassembly by removing and replacing the faulty component or piece/part. During the repair process inspect adjacent piece/parts for excessive wear, corrosion, pitting, friction, or other failure mechanism that could indicate impending failure.	I	N/A	Common Hand Tools
039C	Align the assembly or subassembly as required and reinstall into the transmitter.	I	N/A	See Table 5
040C	Check interface with unit, align or adjust overall unit as required and verify repair by functionally testing the transmitter.	I	N/A	See Table 5
041C	Provide disposition for repairable components.	I	N/A	None
	Indicator Unit, Type B and F/60			
042C	Fault isolate indicator to faulty component or piece/part.	I	N/A	See Table 5
043C	Repair indicator by removing and replacing the faulty component or piece/part. During the repair process inspect related piece/parts for excessive wear, corrosion, pitting, friction, or other failure mechanism that could indicate impending failure.	I	N/A	Common Hand Tools

Req. Number	Requirement	Maint. Level	Interval	GSE Requirement
044C	Align and adjust the indicator as required and verify the repair by functionally testing the indicator.	I	N/A	See Table 5
045C	Provide disposition for repairable components.	I	N/A	None
	Crosswind/Headwind Computer Unit			
046C	Fault isolate computer unit to defective assembly or subassembly.	I	N/A	See Table 5
047C	Fault isolate defective assembly or subassembly to faulty component or piece/part.	I	N/A	See Table 5
048C	Repair assembly or subassembly by removing and replacing the faulty component or piece/part. During the repair process inspect related piece/parts for excessive wear, corrosion, pitting, friction, or other failure mechanism that could indicate impending failure.	I	N/A	Common Hand Tools
049C	Align the assembly or subassembly as required and reinstall into the computer.	I	N/A	See Table 5
050C	Check interface with unit, align or adjust overall unit as required and verify repair by functionally testing the computer	I	N/A	See Table 5
051C	Provide disposition for repairable components.	I	N/A	None
	Crosswind/Headwind Indicator Unit			
052C	Fault isolate indicator to faulty component or piece/part.	I	N/A	See Table 5
053C	Repair indicator by removing and replacing the faulty component or piece/part.	I	N/A	Common Hand Tools
054C	Verify the repair by functionally testing the indicator.	I	N/A	See Table 5
055C	Provide disposition for repairable components.	I	N/A	None

MAINTENANCE PLAN

PART III – MAINTENANCE REQUIREMENTS (continued)

Wind Measuring and Indicating System — **Designation/Nomenclature**

NAEC 002-8U — **Maintenance Plan Number**

Req. Number	Requirement	Maint. Level	Interval	GSE Requirement
	Wind Direction and Speed Recorder			
056C	Fault isolate recorder to defective assembly or subassembly.	I	N/A	See Table 5
057C	Fault isolate defective assembly or subassembly to faulty component or piece/part.	I	N/A	See Table 5
058C	Repair assembly or subassembly by removing and replacing the faulty component or piece/part. During repair inspect related mechanical or electromechanical piece/parts for failure mechanisms that could indicate impending failure.	I	N/A	Common Hand Tools
059C	Reinstall the repaired assembly or subassembly into the recorder and adjust or align as required.	I	N/A	See Table 5
060C	Verify repair by functionally testing the recorder.	I	N/A	See Table 5
061C	Provide disposition for repairable components.	I	N/A	None
	Wind Indicating and Measuring Equipment, Subassemblies			
062C	Fault isolate the following subassemblies to the defective piece/part as required: Amplifier Subassembly, Servo[1] DC Power Supply Subassembly[2] Integrator Subassembly, Roller Disc[3] Integrator Subassembly, Roller Disc[4] Microammeter, Crosswind[5] Microammeter, Headwind[5]	I	N/A	See Table 5

[1]Part of Type B Transmitter and Crosswind/Headwind Computer Units
[2]Part of Crosswind/Headwind Computer Unit
[3]Part of Type B Transmitter Unit
[4]Part of Type F Transmitter Unit
[5]Part of Crosswind/Headwind Indicator Unit

MAINTENANCE PLAN

PART III – MAINTENANCE REQUIREMENTS (continued)

Wind Measuring and Indicating System
Designation/Nomenclature

NAEC 002-80
Maintenance Plan Number

Req. Number	Requirement	Maint. Level	Interval	GSE Requirement
063C	Repair the faulty subassembly by removing and replacing the defective piece/part.	I	N/A	See Table 5
064C	Adjust the subassembly as required and verify the repair by functional test.	I	N/A	See Table 5
	Depot-Level Maintenance			
	Depot-level maintenance consists of all intermediate-level maintenance activities as well as a complete refurbishment and calibration capability for all units, assemblies, subassemblies, and components making up the wind indicating and measuring system which are designated as depot repairable or depot disposition end items. Detailed intermediate activities involving repair for which the depot has capability are not repeated herein.			
065C	Disassemble, clean, inspect, lubricate, adjust, align, repair/refurbish, remove/replace defective components and piece/parts, reassemble, and calibrate the following units and constituent assemblies and subassemblies as required:			See Table 5
	Detector Unit, Type B and F	D	N/A	
	Speed Mechanism Assembly	D	N/A	
	Synchro Housing Subassembly	D	N/A	
	Housing and Shaft Assembly	D	N/A	
	Shaft Housing Subassembly	D	N/A	
	Transmitter Unit, Type B and F	D	N/A	
	Housing Assembly	D	N/A	
	Wind Direction Assembly	D	N/A	
	Wind Speed Assembly	D	N/A	
	Roller-Disc Integrator Subassembly	D	N/A	

Req. Number	Requirement	Maint. Level	Interval	GSE Requirement
	Indicator Unit, Type B and F/60	D	N/A	
	Wind Speed Assembly	D	N/A	
	Wind Direction Assembly	D	N/A	
	Crosswind/Headwind Computer Unit	D	N/A	
	Chassis Assembly	D	N/A	
	Windspeed Indicator Unit	D	N/A	
	Wind Direction and Speed Recorder	D	N/A	
	Wind Direction Assembly	D	N/A	
	Wind Speed Assembly	D	N/A	
	Chart Drive Assembly	D	N/A	
066C*	Fault isolate the following components to the defective piece/part; i.e. bearings, brushes, dampers, rotor, armature, etc., as required: Synchro, Type 1F Synchro, Type 1HCT Synchro, Type 5HG Synchro, Type 18CT4 Sunchro, Type 31TRX4 Synchro, Type 37TRX6 Synchro, Type 18TRX6 Servomotor, 1134617-1 Servomotor, 1134617-2 Synchronous Motor, 1134619	D	N/A	Common Hand Tools and GPETE
067C*	Repair the faulty component by removing and replacing the defective piece/parts.	D	N/A	Common Hand Tools
068C*	Verify the component repair by functional test.	D	N/A	Mk 2 Synchro Tester, Mk 30 Synchro Tester and GPETE

*These requirements shall be accomplished only if a determination is made that the component can be easily and economically repaired -- if not the component shall be scrapped.

APPENDIX A

AN/UMQ-5 WIND MEASURING AND INDICATING SYSTEM

The AN/UMQ-5 Wind Measuring and Indicating System (see NAVAIR 50-30 FR-525, dated January 1957) is used primarily for land based installations and is under the cognizance of ASO. As such, there is no APL nor does the system (or any of the units making up the system) appear on a COSAL. Normally, this system is not used in shipboard installations, and the design of units making up the system are different from the standard Type B and F systems used for shipboard installations.

The system was manufactured by Bendix-Friez Instrument Division (currently the Bendix Corporation, Environmental and Process Instruments Division) in Towson, Maryland; however, none of the units making up the system have been manufactured since the 1960s.

Following is a listing of the units making up the AN/UMQ-5 Wind Measuring and Indicating System and their respective NSNs.

DESIGNATION	NOMENCLATURE	NSN
ML 400	Detector	2R 6660 00-557-5639
ML 400B	Detector	2R 6660 00-531-5051
ML 400C	Detector	2R 6660 00-650-2463
ID 300B	Indicator, Speed	2R 6660 00-530-3482
ID 300B	Indicator, Speed	2R 6660 00-556-1895
ID 586	Indicator, Direction and Speed	2R 6660 00-527-9496
RD 108B	Recorder	2R 6660 00-552-0095
MT 535	Mount	2R 6660 00-223-7338

Several ships of the AGS and MSO type use units derived from the UMQ-5 system. Requests have been processed from some of these ships for ML 400 detectors. Although the ML 400 Detector is no longer in production, a similar (and interchangeable) unit is being manufactured; the Bendix Aerovane Transmitter Model 120. The transmitter unit in the Aerovane system is the same unit that is called the detector in the UMQ-5, and the Type B and F systems. The primary difference between the ML 400 detector and the Aerovane Transmitter Model 120 is that the ML 400 contained a 5HG synchro in its wind direction circuit and could drive 5 to 6 receivers, while the Aerovane Transmitter Model 120 contains a 1GH synchro and can drive only 2 to 3 receivers.

APPENDIX B

EQUIPMENT APPLICATION

APPENDIX B

Appendix B presents detailed application information for the units making up the wind measuring and indicating system. Each unit, its National Stock Number (NSN) and Allowance Parts List number (APL), is listed and all ship hull numbers and names on which the unit is installed, along with the quantity of units installed, are identified.

Following are the applicable codes:

AC (Application Code)

ZA	Active U.S. Ship
ZB	MAP Ship
ZC	Land-based Installation
ZD	Inactive U.S. Ship

QPA (Quantity Per Application)

Number of subject units installed.

Unit listings are in APL number order.

Wind Direction and Speed Transmitter, Type B
NSN 4A 6660 00-557-3417
APL 381510002

AC	QPA	Ship Hull No.		and Name
ZB	00001	AVB	1	INS ANTEO
ZB	00001	DD	670	ARG ESPORA
ZB	00001	DD	630	ARG ALMIR DOMECQ GAR
ZB	00001	AR	13	IINS CHAH BAHAR
ZB	00001	PCER	851	ARCS SAN ANDRES
ZB	00001	DD	747	ROCS HENG YANG
ZB	00001	DE	341	KRI SAMADIKUN
ZB	00001	DD	756	VNS CARABDBO
ZB	00001	DD	745	ROCS HSIANG YANG
ZB	00001	DD	838	ROCS FU YANG
ZB	00001	DD	727	ROK IN CHEON
ZB	00001	DE	342	RINS HARTADINATA
ZB	00001	DE	344	RINS NGURAH RAI
ZB	00001	DD	730	EX-USS COLLETT
ZA	00001	ARC	3	USNS AEOLUS
ZA	00001	ARC	4	USS THOR EMARADJ
ZD	00001	LKA	61	USS MULIPHEN
ZD	00001	AKA	92	USS WYANDOT
ZD	00001	LPA	248	USS REVERE PAUL
ZD	00002	AGOR	8	EX-USS ELTANIN
ZA	00001	AGOR	11	USNS MIZAR
ZD	00001	DE	148	USS BROUGH
ZD	00002	DE	152	USS PETERSON
ZD	00001	DER	244	USS OTTERSTETTER
ZD	00001	DER	316	USS HARVESON
ZD	00001	DER	322	USS NEWELL
ZD	00001	DER	318	USS KIRKPATRICK
ZD	00001	DER	324	USS FALGOUT
ZB	00001	DER	326	TUNS BOURGUIBA
ZD	00001	DER	332	USS PRICE
ZB	00001	LSD	5	ARG CNDO DE LASALA
ZA	00001	LSD	29	USS PLYMOUTH ROCK
ZA	00001	LSD	30	USS FORT SNELLING
ZA	00001	LSD	31	USS POINT DEFIANCE
ZA	00001	LSD	32	USS SPIEGEL GROVE
ZA	00001	LSD	34	USS HERMITAGE
ZA	00001	LSD	35	USS MONTICELLO
ZD	00001	CV	31	USS BON HOMME RICHAR
ZD	00002	CV	34	USS ORISKANY
ZA	00002	CV	43	USS CORAL SEA
ZA	00001	CV	60	USS SARATOGA
ZA	00002	CV	62	USS INDEPENDENCE
ZA	00002	CV	63	USS KITTY HAWK
ZA	00002	CV	64	USS CONSTELLATION
ZD	00001	CLG	7	USS SPRINGFIELD
ZD	00001	CA	70	USS CANBERRA
ZD	00001	CG	6	USS PROVIDENCE
ZA	00001	CG	5	USS OKLAHOMA CITY
ZD	00001	CG	4	USS LITTLE ROCK
ZB	00001	DD	760	ROCS NAN YANG
ZD	00001	DD	793	USS YOUNG CASSIN
ZA	00001	AG	154	USNS OBSERVATION ISL
ZA	00001	AG	153	USS COMPASS ISLAND
ZD	00001	DD	659	US DASHIELL
ZD	00001	DD	683	USS STOCKHAM
ZD	00001	DD	713	USS BAILEY KENNETH D
ZD	00001	DD	724	USS LAFFEY
ZD	00001	DD	470	USS BACHE
ZA	00001	AD	15	USS PRAIRIE
ZA	00001	AD	19	USS YOSEMITE
ZD	00001	AR	22	USS KLONDIKE
ZD	00001	AD	27	USS YELLOWSTONE
ZD	00001	AR	28	USS GRAND CANYON
ZA	00001	DD	945	USS HULL
ZA	00001	DD	946	USS EDSON
ZA	00001	DD	951	USS JOY TURNER
ZD	00001	AO	22	USS CIMARRON
ZA	00002	AO	144	USNS MISSISSINEWA

ZA	00001	AE	23	USS NITRO
ZA	00001	AE	24	USS PYRO
ZD	00002	AR	9	USS DELTA
ZD	00001	AH	16	USS REPOSE
ZD	00001	AR	23	USS MARKAB
ZD	00001	LPA	27	USS CLYMER GEORGE
ZD	00001	LPA	33	USS BAYFIELD
ZD	00001	LPA	45	USS HENRICO
ZD	00001	LPA	44	USS FREMONT
ZA	00001	AR	8	USS JASON
ZB	00001	AR	14	ROCS YU-TAI
ZD	00001	AGR	2	USS LOOKOUT
ZD	00001	AGR	13	USS INTERDICTOR
ZD	00001	AGR	16	USS WATCHMAN
ZD	00001	AGR	14	USS INTERPRETER
ZD	00001	AGR	15	USS TRACER
ZA	00000	DD	817	USS CORRY
ZA	00001	DD	827	USS OWENS ROBERT A
ZA	00002	CV	61	USS RANGER
ZD	00002	DD	836	USS MACKENZIE GEORGE
ZB	00001	DD	859	TNS KOCATEPE
ZA	00001	DD	931	USS SHERMAN FORREST
ZA	00001	DD	944	USS HULLINNIX
ZD	00001	DER	336	USS HALE ROY O
ZD	00001	DER	384	USS RHODES
ZD	00001	DER	386	USS SAVAGE
ZD	00001	DER	387	USS VANCE
ZD	00001	DER	391	USS CHAMBERS
ZD	00001	DE	1023	USS EVANS
ZB	00001	ARL	38	RPS NARRA
ZB	00001	DER	251	EX-USS DER 251
ZB	00001	WHEC	382	RPS DIEGO SILANG
ZB	00001	WHEC	384	EX-USCGC WHEC 384
ZB	00001	WHEC	383	RPS FRANCISCO DAGAHO
ZD	00001	WHEC	374	RVN PHAM NGU LAO
ZD	00001	LFR	409	USS CLARION RIVER
ZD	00001	LFR	525	USS ST FRANCIS RIVER
ZD	00002	LFR	536	USS WHITE RIVER
ZB	00001	DD	678	SNS JORGE JUAN
ZB	00001	DD	668	TNS ISTANBUL
ZB	00001	DD	709	TNS ZAFER
ZA	00001	WAGB	282	USCG NORTHWIND
ZA	00001	WAGB	281	USCG WESTWIND
ZA	00001	WAGB	4	USCG GLACIER
ZC	00001	AFDB	7	USS LOS ALAMOS

Summary data

	AC	QPA
ZA	0034	00039
ZB	0027	00027
ZC	0001	00001
ZD	0051	00057
TOTAL	0113	00124

Wind Direction and Speed Indicator Unit, Type B
NSN 4A 6660 00-530-0851
APL 381510004

AC	QPA	Ship Hull	No.	and Name
ZB	00003	DD	853	TNS CAKMAK
ZB	00001	DD	730	EX-USS COLLETT
ZA	00001	ARC	4	USS THOR (MARAD)
ZD	00005	CVS	10	USS YORKTOWN
ZD	00008	CVS	12	USS HORNET
ZA	00015	AVT	16	USS LEXINGTON
ZD	00002	CVS	20	USS BENNINGTON
ZD	00003	CVS	38	USS SHANGRI LA
ZA	00001	CG	28	USS WAINWRIGHT
ZD	00008	CC	2	USS WRIGHT
ZA	00002	CV	62	USS INDEPENDENCE
ZB	00002	DD	787	ROCS CHIEN YANG
ZA	00007	DDG	20	USS GOLDSBOROUGH
ZA	00003	DDG	21	USS COCHRANE
ZA	00001	FFG	3	USS SCHOFIELD
ZD	00005	LCC	17	USS TACONIC
ZD	00002	AGR	15	USS TRACER
ZA	00001	FF	1052	USS KNOX
ZA	00002	FF	1085	USS BEARY B DONALD
ZA	00001	FF	1089	USS BROWN JESSE L
ZA	00001	FF	1092	USS HART THOMAS C
ZA	00001	FF	1060	USS LANG

Summary data

	AC	QPA
ZA	0012	00036
ZB	0003	00006
ZD	0007	00033
TOTAL	0022	00075

Wind Direction and Speed Detector Unit, Type B
NSN 4A 6660 00-943-7221
APL 381510034

AC	QPA	Ship	Hull No.	and Name
ZD	00002	LPA	227	USS RENVILLE
ZC	00001	AFDM	7	AFDM 7
ZB	00001	ICLG	2	INS DUILIO ITALY
ZB	00002	DD	644	ARG ROSALES
ZB	00001	ICLG	3	INS DORIA
ZB	00002	DD	765	TNS TINAZTEPE
ZB	00003	DD	694	RHN MIAOULIS
ZB	00001	LSD	25	SNS GALICIA
ZB	00002	DD	742	RHN THEMISTOCLES
ZB	00001	DD	745	ROCS HSIANG YANG
ZB	00002	DD	857	ROCS HWA YANG
ZB	00002	LSD	21	RHN NAFKRATOUSSA
ZB	00001	DD	696	ROCS HUI YANG
ZB	00001	DD	838	ROCS FU YANG
ZB	00001	DD	789	TNS GAYRET
ZB	00003	DD	703	ROK DAE GU
ZB	00003	DD	761	BNS ALAGOAS
ZB	00002	DD	776	BNS SERGIPE
ZB	00001	DD	853	TNS CAKMAK
ZA	00002	ARC	3	USNS AEOLUS
ZA	00002	ARC	6	USNS ALBERT J MYER
ZA	00002	AGM	8	USNS WHEELING
ZA	00001	ARC	4	USS THOR [MARAD]
ZD	00001	LPA	194	USS SANDOVAL
ZA	00002	WAGB	11	•USCG POLOR SEA
ZD	00001	AF	56	USS DENEBOLA
ZA	00002	AF	58	USNS RIGEL
ZD	00002	AF	59	USS VEGA
ZD	00001	IX	502	USS MERCER
ZD	00001	IX	311	USS BENEWAH
ZD	00001	IX	503	USS NUECES
ZA	00002	AVM	1	USS NORTON SOUND
ZA	00002	AD	36	USS BRYCE CANYON
ZD	00002	LPA	210	USS TELFAIR
ZD	00001	LPA	222	USS PICKAWAY
ZD	00002	LPA	249	USS MARION FRANCIS
ZD	00001	AK	279	USNS NORWALK
ZA	00001	AK	281	USNS VICTORIA
ZA	00001	AK	280	USNS FURHAN
ZA	00001	AG	164	USNS KINGSPORT
ZD	00001	AKS	37	USS ALTAIR
ZD	00001	AK	259	USS ALCOR
ZD	00001	AK	260	USS BETELGEUSE
ZD	00001	ARS	6	USS ESCAPE
ZA	00002	ARS	8	USS PRESERVER
ZB	00002	ARS	7	ROCS TA-HU
ZD	00002	ARS	25	USS SAFEGUARD
ZD	00002	ARS	23	USS DELIVER
ZA	00002	ARS	39	USS CONSERVER
ZA	00001	ARS	41	USS OPPORTUNE
ZA	00002	ARS	42	USS RECLAIMER
ZA	00001	ARS	43	USS RECOVERY
ZD	00002	LSD	16	USS CABILDO
ZD	00001	LSD	19	USS COMSTOCK
ZD	00002	LSD	20	USS DONNER
ZD	00001	LSD	26	USS TORTUGA
ZA	00002	LSD	28	USS THOMASTON
ZA	00001	LSD	30	USS FORT SNELLING
ZD	00002	CVS	10	USS YORKTOWN
ZD	00002	CVS	11	USS INTREPID
ZD	00002	CVS	12	USS HORNET
ZA	00002	AVT	16	USS LEXINGTON
ZD	00002	CV	31	USS BON HOMME RICHAR
ZD	00002	CV	34	USS ORISKANY
ZA	00002	CV	41	USS MIDWAY
ZA	00002	CV	43	USS CORAL S' A
ZD	00002	AGMR	2	USS ARLINGTON
ZA	00002	CV	60	USS SARATOGA

ZA	00002	CV	61	USS RANGER
ZA	00002	CV	64	USS CONSTELLATION
ZA	00002	CVN	65	USS ENTERPRISE
ZA	00002	CV	66	USS AMERICA
ZD	00001	CLG	7	USS SPRINGFIELD
ZD	00002	CG	4	USS LITTLE ROCK
ZA	00002	CG	11	USS CHICAGO
ZD	00002	CA	148	USS NEWPORT NEWS
ZA	00001	CGN	9	USS LONG BEACH
ZD	00002	DD	744	USS BLUE
ZB	00002	DD	746	ROCS LO YANG
ZD	00002	DD	752	USS CUNNINGHAM ALFRE
ZD	00002	DD	754	USS EVANS FRANK E
ZB	00002	DD	755	EX-USS JOHN A BOLE
ZB	00002	DD	759	EX-USS LOFBERG
ZB	00002	DD	779	CNS MINISTRO PORTALE
ZB	00002	DD	781	VNS FALCON
ZB	00002	DD	805	ROK CHUNG BUK
ZB	00002	DD	697	CNS MINISTRO ZENTENO
ZD	00002	DD	699	USS WALDRON
ZD	00003	DD	718	USS HAMNER
ZB	00002	DD	729	EX-USS LYMAN SWENSON
ZB	00002	DD	728	EX-USS MANSFIELD
ZA	00002	AD	14	USS DIXIE
ZA	00003	AS	11	USS FULTON
ZD	00001	AS	15	USS BUSHNELL
ZA	00001	AS	16	USS GILMORE
ZA	00001	AS	18	USS ORION
ZA	00002	AD	17	USS PIEDMONT
ZD	00001	AD	24	USS EVERGLADES
ZA	00002	AD	37	USS GOMPERS SAMUEL
ZA	00003	DDG	2	USS CHARLES F ADAMS
ZA	00002	DDG	4	USS LAWRENCE
ZA	00002	DDG	5	USS RICKETTS CLAUDE
ZA	00002	DDG	9	USS TOWERS
ZA	00002	DDG	12	USS ROBISON
ZA	00002	DDG	14	USS BUCHANAN
ZA	00002	DDG	15	USS BERKELEY
ZA	00002	DDG	16	USS STRAUSS JOSEPH
ZA	00002	DDG	17	USS CONYNGHAM
ZA	00002	DDG	18	USS SEMMES
ZA	00004	DDG	19	USS TATTNALL
ZA	00002	DDG	20	USS GOLDSBOROUGH
ZA	00002	DDG	21	USS COCHRANE
ZA	00002	DDG	22	USS STODDERT BENJAMI
ZA	00002	AS	31	USS HUNLEY
ZA	00002	DDG	23	USS BYRD RICHARD E
ZA	00002	DDG	24	USS WADDELL
ZA	00002	AS	32	USS HOLLAND
ZA	00002	AS	33	USS LAKE SIMON
ZA	00002	AS	34	USS CANOPUS
ZD	00001	AOG	56	USS NOXUBEE
ZD	00002	AO	97	USS ALLAGASH
ZA	00002	AO	98	USS CALOOSAHATCHEE
ZA	00001	AO	99	USS CANISTEO
ZD	00002	AO	32	USS GUADALUPE
ZB	00001	AOG	8	CNS BEAGLE
ZA	00002	AO	51	USS ASHTABULA
ZD	00001	AO	54	USS CHIKASKIA
ZA	00001	AO	57	USNS MARIAS
ZD	00002	AO	60	USS NANTAHALA
ZD	00002	AO	61	USS SEVERN
ZD	00002	AO	64	USS TOLOVANA
ZD	00002	LCC	7	USS MOUNT MCKINLEY
ZC	00001	AGDS	2	USS POINT LOMA
ZA	00002	AF[illegible]	1	USS MARS
ZA	00002	AOE	1	USS SACRAMENTO
ZA	00002	AOE	2	USS CAMDEN
ZA	00002	AFS	3	USS NIAGARA FALLS
ZA	00002	AFS	4	USS WHITE PLAINS
ZA	00002	AFS	5	USS CONCORD
ZA	00002	AD	38	USS PUGET SOUND
ZA	00002	AE	26	USS KILAUEA
ZA	00002	AE	27	USS BUTTE
ZA	00002	LCC	19	USS BLUERIDGE
ZA	00002	AGOR	13	USNS BARTLETT
ZA	00002	AGOR	12	USNS DESTEIGUER

ZA	00002	LKA	113	USS CHARLESTON
ZA	00002	LKA	114	USS DURHAM
ZA	00002	LKA	115	USS MOBILE
ZA	00002	LKA	116	USS ST LOUIS
ZA	00002	AOE	3	USS SEATTLE
ZA	00002	AOR	1	USS WICHITA
ZA	00002	AOR	2	USS MILWAUKEE
ZA	00002	AS	36	USS SPEAR L Y
ZA	00002	AO	143	USS NEOSHO
ZA	00002	AO	144	USNS MISSISSINEWA
ZA	00002	AO	145	USNS HASSAYAMPA
ZA	00002	AO	146	USS KAWISHIWI
ZA	00002	AO	147	USS TRUCKEE
ZA	00002	AO	148	USS PONCHATOULA
ZA	00001	ATF	105	USS MOCTOBI
ZB	00001	ATF	101	EX-ATF 101
ZB	00001	ATF	106	EX-ATF 106
ZA	00001	ATF	110	USS QUAPAW
ZA	00002	ATF	113	USS TAKELMA
ZB	00001	ATF	156	ARAS LUISENO
ZB	00001	ATF	161	EX-ATF 161
ZA	00001	ATF	160	USS PAPAGO
ZA	00001	ATF	162	USS SHAKORI
ZA	00002	LPD	1	USS RALEIGH
ZA	00004	LPD	2	USS VANCOUVER
ZA	00002	AGF	3	USS LA SALLE
ZA	00002	LPD	4	USS AUSTIN
ZA	00002	LPD	5	USS OGDEN
ZA	00002	LPD	6	USS DULUTH
ZA	00002	LPH	9	USS GUAM
ZA	00002	LPD	7	USS CLEVELAND
ZA	00002	LPD	8	USS DUBUQUE
ZA	00002	LPD	9	USS DENVER
ZA	00002	LPD	10	USS JUNEAU
ZA	00002	LPD	11	USS CORONADO
ZA	00002	LPD	12	USS SHREVEPORT
ZA	00002	LPD	13	USS NASHVILLE
ZA	00002	LPH	10	USS TRIPOLI
ZA	00002	LPD	14	USS TRENTON
ZA	00002	LPD	15	USS PONCE
ZA	00002	LPH	11	USS NEW ORLEANS
ZD	00002	AGMR	1	USS ANNAPOLIS
ZA	00002	LPH	2	USS IWO JIMA
ZA	00002	LPH	3	USS OKINAWA
ZA	00002	LPH	7	USS GUADALCANAL
ZD	00002	MCS	2	USS OZARK
ZD	00001	ATA	185	USS KOKA
ZA	00002	AE	25	USS HALEAKALA
ZD	00002	AE	14	USS FIREDRAKE
ZD	00001	AE	12	USS WRANGELL
ZA	00002	LKA	112	USS TULARE
ZD	00001	LKA	19	USS THUBAN
ZD	00001	LPA	45	USS HENRICO
ZA	00001	AR	6	USS AJAX
ZA	00001	AR	7	USS HECTOR
ZA	00002	AE	21	USS SURIBACHI
ZA	00001	AE	22	USS MAUNA KEA
ZA	00002	AGM	19	USNS VANGUARD
ZA	00002	AGM	20	USNS REDSTONE
ZD	00003	AGR	1	USS GUARDIAN
ZD	00002	AGR	12	USS VIGIL
ZA	00002	LCC	20	USS MOUNT WHITNEY
ZA	00002	LKA	117	USS EL PASO
ZA	00002	LPH	12	USS INCHON
ZA	00000	LST	1180	USS MANITOWOC
ZA	00002	LST	1181	USS SUMTER
ZA	00002	LST	1182	USS FRESNO
ZA	00002	LST	1183	USS PEORIA
ZA	00002	LST	1184	USS FREDERICK
ZA	00002	LST	1185	USS SCHENECTADY
ZA	00002	LST	1186	USS CAYUGA

ZA	00002	LST	1187	USS TUSCALOOSA
ZA	00002	LST	1188	USS SAGINAW
ZA	00002	LST	1189	USS SAN BERNARDINO
ZA	00002	LST	1190	USS BOULDER
ZA	00002	LST	1191	USS RACINE
ZA	00002	LST	1192	USS SPARTANBURG COUN
ZA	00002	LST	1193	USS FAIRFAX COUNTY
ZA	00002	LST	1194	USS LA MOURE COUNTY
ZA	00002	AE	28	USS SANTA BARBARA
ZA	00002	AE	29	USS MOUNT HOOD
ZA	00002	AE	32	USS FLINT
ZA	00002	AE	33	USS SHASTA
ZA	00002	AE	34	USS MOUNT BAKER
ZA	00002	AFS	6	USS SAN DIEGO
ZA	00002	AFS	7	USS SAN JOSE
ZA	00002	AOE	4	USS DETROIT
ZA	00002	AOR	3	USS KANSAS CITY
ZA	00002	AOR	4	USS SAVANNAH
ZA	00002	AOR	5	USS WABASH
ZA	00002	AOR	6	USS KALAMAZOO
ZA	00002	AS	37	USS DIXON
ZA	00002	LST	1195	USS BARBOUR COUNTY
ZA	00002	LST	1196	USS HARLAN COUNTY
ZA	00002	LST	1197	USS BARNSTABLE COUNT
ZA	00002	LST	1198	USS BRISTOL COUNTY
ZA	00002	AE	35	USS KISKA
ZA	00000	AS	39	USS EMORY S LAND
ZA	00000	AS	40	USS FRANK CABLE
ZA	00001	DD	821	USS JOHNSTON
ZA	00001	DD	822	USS MCCARD ROBERT H
ZD	00004	DD	826	EX-USS AGERHOLM
ZB	00002	DD	830	ROK JEON BUK
ZD	00001	DD	840	USS GLENNON
ZD	00001	DD	864	USS ELLISON HAROLD J
ZB	00002	DD	877	ARG PY
ZA	00006	CG	16	USS LEAHY
ZA	00002	CG	17	USS YARNELL HARRY E
ZA	00002	CG	18	USS [illegible]
ZA	00002	CG	20	USS TURNER RICHMOND
ZA	00002	CG	21	USS GRIDLEY
ZA	00000	CG	22	USS ENGLAND
ZA	00002	CG	23	USS HALSEY
ZA	00002	FF	1037	USS BRONSTEIN
ZA	00002	FF	1038	USS MCCLOY
ZD	00002	AVB	2	USS TALLAHATCHIE COU
ZD	00001	AGP	1176	USS GRAHAM COUNTY
ZA	00002	LST	1179	USS NEWPORT
ZB	00002	AGP	786	EX-USS AGP 786
ZD	00002	LSD	14	USS RUSHMORE
ZD	00002	LSD	15	USS SHADWELL
ZA	00002	AFS	2	USS SYLVANIA
ZD	00001	AGEH	1	USS PLAINVIEW
ZA	00002	ARC	2	USNS NEPTUNE
ZB	00002	DD	472	BNS PARA
ZB	00002	ICLG	1	INS GARIBALDI ITALY
ZB	00003	DD	869	RHN SACHTOURIS
ZB	00002	DD	675	BNS PIAUI
ZB	00002	TKDE	1	TURKISH NAVY
ZB	00002	DD	794	BNS SANTA CATARINA
ZB	00001	PF	107	RTNS TAPI
ZB	00002	DD	544	TNS ISKENDERUN
ZB	00001	PF	108	RTNS KRIRIRAT
ZB	00002	ICLG	4	INS VENETO ITALY
ZB	00003	DD	872	TNS ADATEPE
ZB	00002	DD	777	IINS BABR
ZA	00002	WAGB	10	USCG POLOR STAR
ZB	00002	TKDE	2	TNS TURKISH DESTROYE
ZB	00002	DD	780	IINS PALANG
ZB	00002	DD	770	BNS ESPIRITO SANTO
ZB	00002	DD	758	BNS RIO GRANDE DO NO
ZA	00001	WLM	686	USCG RED BEECH
ZA	00001	WLM	689	USCG RED OAK
ZA	00001	WLM	688	USCG RED CEDAR
ZA	00001	WLM	687	USCG RED BIRCH
ZA	00001	AR	8	USS JASON
ZA	00002	AE	23	USS NITRO
ZA	00001	WMEC	616	USCG DILIGENCE

Summary data

	AC	QPA
ZA	0178	00331
ZB	0051	00092
ZC	0002	00002
ZD	0062	00102
TOTAL	0293	00527

Wind Direction and Speed Transmitter, Type B
NSN 4A 6660 00-691-1529
APL 381510035

AC	QPA	Ship	Hull No.	and Name
ZD	00001	LPA	227	USS RENVILLE
ZC	00001	AFDM	7	AFDM 7
ZB	00001	ICLG	2	INS DUILIO ITALY
ZB	00001	DD	644	ARG ROSALES
ZB	00001	ICLG	3	INS DORIA
ZB	00001	DD	765	TNS TINAZTEPE
ZB	00001	DD	694	RHN MIAOULIS
ZB	00001	LSD	25	SNS GALICIA
ZB	00002	DD	742	RHN THEMISTOCLES
ZB	00002	DD	745	ROCS HSIANG YANG
ZB	00001	DD	857	ROCS HWA YANG
ZB	00001	LSD	21	RHN NAFKRATOUSSA
ZB	00002	DD	838	ROCS FU YANG
ZB	00001	AD	31	RINS DUMAI
ZB	00001	DD	789	TNS GAYRET
ZB	00001	DD	703	ROK DAE GU
ZB	00001	DD	761	BNS ALAGOAS
ZB	00001	DD	776	BNS SERGIPE
ZB	00001	DE	343	RINS MONGISIDI
ZA	00001	ARC	6	USNS ALBERT J MYER
ZA	00001	AGM	8	USNS WHEELING
ZD	00001	LKA	57	USS CAPRICORNUS
ZD	00001	LKA	103	USS RANKIN
ZA	00001	WHEC	724	USCG MUNRO
ZD	00001	AF	52	USS ARCTURUS
ZD	00001	AF	54	USS PICTOR
ZD	00001	AF	56	USS DENEBOLA
ZA	00001	AF	58	USNS RIGEL
ZD	00001	AF	59	USS VEGA
ZD	00001	IX	311	USS BENEWAH
ZD	00001	IX	502	USS MERCER
ZD	00001	IX	503	USS NUECES
ZA	00001	AVM	1	USS NORTON SOUND
ZA	00001	AD	36	USS BRYCE CANYON
ZD	00001	LPA	210	USS TELFAIR
ZD	00001	LPA	222	USS PICKAWAY
ZD	00001	LPA	249	USS MARION FRANCIS
ZA	00001	AK	280	USNS FURMAN
ZA	00001	AK	281	USNS VICTORIA
ZD	00001	AK	279	USNS NORWALK
ZA	00001	AG	164	USNS KINGSPORT
ZD	00001	AK	259	USS ALCOR
ZD	00001	AKS	32	USS ALTAIR
ZD	00001	AK	260	USS BETELGEUSE
ZC	00001	AGDS	2	USS POINT LOMA
ZD	00001	ARS	6	USS ESCAPE
ZB	00001	ARS	7	ROCS TA-HU
ZA	00001	ARS	8	USS PRESERVER
ZD	00001	ARS	23	USS DELIVER
ZD	00001	ARS	25	USS SAFEGUARD
ZA	00001	ARS	39	USS CONSERVER
ZA	00001	ARS	41	USS OPPORTUNE
ZA	00001	ARS	43	USS RECOVERY
ZA	00001	ARS	42	USS RECLAIMER
ZD	00001	BB	62	USS NEW JERSEY
ZD	00001	LSD	16	USS CABILDO
ZD	00001	LSD	20	USS DONNER
ZD	00001	LSD	27	USS WHETSTONE
ZA	00001	LSD	28	USS THOMASTON
ZA	00001	LSD	29	USS PLYMOUTH ROCK
ZA	00001	LSD	35	USS MONTICELLO
ZD	00002	CVS	10	USS YORKTOWN
ZD	00002	CVS	11	USS INTREPID
ZD	00002	CVS	12	USS HORNET
ZA	00002	AVT	16	USS LEXINGTON
ZD	00001	CVS	20	USS BENNINGTON
ZD	00001	CV	31	USS BON HOMME RICHAR

ZD	00001	AF	10	USS ALDEBARAN
ZD	00001	LKA	19	USS THUBAN
ZA	00001	LKA	112	USS TULARE
ZA	00001	AR	6	USS AJAX
ZA	00001	AR	7	USS HECTOR
ZA	00001	AE	21	USS SURIBACHI
ZA	00001	AE	22	USS MAUNA KEA
ZA	00001	AGM	19	USNS VANGUARD
ZA	00001	AGM	20	USNS REDSTONE
ZD	00001	AGR	1	USS GUARDIAN
ZA	00001	LCC	20	USS MOUNT WHITNEY
ZA	00001	LKA	117	USS EL PASO
ZA	00001	LPH	12	USS INCHON
ZA	00003	LST	1180	USS MANITOWOC
ZA	00001	LST	1181	USS SUMTER
ZA	00001	LST	1182	USS FRESNO
ZA	00001	LST	1183	USS PEORIA
ZA	00001	LST	1184	USS FREDERICK
ZA	00001	LST	1185	USS SCHENECTADY
ZA	00001	LST	1186	USS CAYUGA
ZA	00001	LST	1187	USS TUSCALOOSA
ZA	00001	LST	1188	USS SAGINAW
ZA	00001	LST	1189	USS SAN BERNARDINO
ZA	00001	LST	1190	USS BOULDER
ZA	00001	LST	1191	USS RACINE
ZA	00001	LST	1192	USS SPARTANBURG COUN
ZA	00001	LST	1193	USS FAIRFAX COUNTY
ZA	00001	LST	1194	USS LA MOURE COUNTY
ZA	00001	AE	28	USS SANTA BARBARA
ZA	00001	AE	29	USS MOUNT HOOD
ZA	00001	AE	32	USS FLINT
ZA	00001	AE	33	USS SHASTA
ZA	00001	AE	34	USS MOUNT BAKER
ZA	00001	AFS	6	USS SAN DIEGO
ZA	00001	AFS	7	USS SAN JOSE
ZA	00001	AOE	4	USS DETROIT
ZA	00001	AOR	3	USS KANSAS CITY
ZA	00001	AOR	4	USS SAVANNAH
ZA	00001	AOR	5	USS WABASH
ZA	00001	AOR	6	USS KALAMAZOO
ZA	00001	AS	37	USS DIXON
ZA	00001	LST	1195	USS BARBOUR COUNTY
ZA	00001	LST	1196	USS HARLAN COUNTY
ZA	00001	LST	1197	USS BARNSTABLE COUNT
ZA	00001	LST	1198	USS BRISTOL COUNTY
ZA	00001	AE	35	USS KISKA
ZA	00000	AS	39	USS EMORY S LAND
ZA	00000	AS	40	USS FRANK CABLE
ZA	00001	DD	821	USS JOHNSTON
ZD	00001	DD	826	EX-USS AGERHOLM
ZB	00001	DD	830	ROK JEON BUK
ZD	00001	DD	840	USS GLENNON
ZD	00001	DD	874	USS DUNCAN
ZB	00001	DD	877	ARG PY
ZA	00001	DD	942	USS BIGELOW
ZA	00003	DD	944	USS MULLINNIX
ZA	00001	DDG	41	USS KING
ZA	00002	CG	16	USS LEAHY
ZD	00001	DER	383	USS MILLS
ZD	00001	DER	400	USS HISSEM
ZA	00002	FF	1037	USS BRONSTEIN
ZA	00002	FF	1038	USS MCCLOY
ZD	00001	AVB	2	USS TALLAHATCHIE COU
ZD	00001	AGP	1176	USS GRAHAM COUNTY
ZA	00001	LST	1179	USS NEWPORT
ZB	00001	AGP	821	EX-USS AGP 821
ZB	00001	AGP	786	EX-USS AGP 786
ZB	00001	AHEC	386	RPS GREGORIO DE PILA
ZD	00001	LSD	14	USS RUSHMORE
ZA	00001	AFS	2	USS SYLVANIA
ZA	00001	ARC	2	USNS NEPTUNE
ZB	00001	DD	472	BNS PARA
ZB	00001	ICLG	1	INS GARIBALDI ITALY
ZB	00001	DD	869	RHN SACHTOURIS
ZB	00001	SPDD	21	SNS MARQUESA DE LA F
ZB	00001	DD	656	TNS IZMIR

ZA	00001	AO	57	USNS MARIAS
ZD	00001	AO	60	USS NANTAHALA
ZD	00001	AO	61	USS SEVERN
ZD	00001	AO	64	USS TOLOVANA
ZD	00001	AO	63	USS CHIFOLA
ZD	00001	LCC	7	USS MOUNT MCKINLEY
ZD	00001	LCC	16	USS POCONO
ZD	00002	LCC	17	USS TACONIC
ZC	00001	ARDM	1	USS OAK RIDGE
ZA	00002	DDG	13	USS HOEL
ZA	00001	AFS	1	USS MARS
ZA	00001	AOE	1	USS SACRAMENTO
ZA	00001	AOE	2	USS CAMDEN
ZA	00001	AFS	3	USS NIAGARA FALLS
ZA	00001	AFS	4	USS WHITE PLAINS
ZA	00001	AFS	5	USS CONCORD
ZA	00001	AD	38	USS PUGET SOUND
ZA	00001	AE	26	USS KILAUEA
ZA	00001	AE	27	USS BUTTE
ZA	00001	LCC	19	USS BLUERIDGE
ZA	00001	AGOR	12	USNS DESTEIGUER
ZA	00001	AGOR	13	USNS BARTLETT
ZA	00001	LKA	113	USS CHARLESTON
ZA	00001	LKA	114	USS DURHAM
ZA	00001	LKA	115	USS MOBILE
ZA	00001	LKA	116	USS ST LOUIS
ZA	00001	AOE	3	USS SEATTLE
ZA	00001	AOR	1	USS WICHITA
ZA	00001	AOR	2	USS MILWAUKEE
ZA	00001	AS	36	USS SPEAR L Y
ZA	00001	AO	143	USS NEOSHO
ZA	00001	AO	144	USNS MISSISSINEWA
ZA	00001	AO	145	USNS HASSAYAMPA
ZA	00001	AO	146	USS KAWISHIWI
ZA	00001	AO	147	USS TRUCKEE
ZA	00001	AO	148	USS PONCHATOULA
ZB	00001	ATF	101	EX-ATF 101
ZB	00001	ATF	103	EX-ATF 103
ZA	00001	ATF	105	USS MOCTOBI
ZB	00001	ATF	106	EX-ATF 106
ZA	00001	ATF	113	USS TAKELMA
ZA	00001	ATF	110	USS QUAPAW
ZB	00001	ATF	156	ARAS LUISENO
ZB	00001	ATF	161	EX-ATF 161
ZA	00001	ATF	160	USS PAPAGO
ZA	00001	ATF	162	USS SHAKORI
ZA	00001	LPD	1	USS RALEIGH
ZA	00001	LPD	2	USS VANCOUVER
ZA	00001	AGF	3	USS LA SALLE
ZA	00001	LPD	4	USS AUSTIN
ZA	00001	LPD	5	USS OGDEN
ZA	00001	LPD	6	USS DULUTH
ZA	00001	LPH	9	USS GUAM
ZA	00001	LPD	7	USS CLEVELAND
ZA	00001	LPD	8	USS DUBUQUE
ZA	00001	LPD	9	USS DENVER
ZA	00001	LPD	10	USS JUNEAU
ZA	00001	LPD	11	USS CORONADO
ZA	00001	LPD	12	USS SHREVEPORT
ZA	00001	LPD	13	USS NASHVILLE
ZA	00002	LPH	10	USS TRIPOLI
ZA	00001	LPD	14	USS TRENTON
ZA	00001	LPD	15	USS PONCE
ZA	00001	LPH	11	USS NEW ORLEANS
ZD	00001	AGHR	1	USS ANNA[illegible] 15
ZA	00001	LPH	3	USS OKINAWA
ZA	00001	LPH	7	USS GUADALCANAL
ZD	00001	HCS	2	USS OZARK
ZD	00001	ATA	185	USS KOKA
ZD	00001	AE	14	USS FIREDRAKE
ZD	00001	AE	12	USS WRANGELL
ZD	00001	ARG	3	ARG 0003
ZB	00001	ARG	4	ROCS TIEN TAI

ZD 00002	CVS	38	USS SHANGRI LA
ZA 00002	CV	41	USS MIDWAY
ZA 00002	CV	43	USS CORAL SEA
ZD 00001	AGMR	2	USS ARLINGTON
ZD 00001	CC	2	USS WRIGHT
ZA 00002	CV	59	USS FORRESTAL
ZA 00001	CV	60	USS SARATOGA
ZA 00002	CV	61	USS RANGER
ZA 00002	CVN	65	USS ENTERPRISE
ZA 00002	CV	66	USS AMERICA
ZA 00002	CG	11	USS CHICAGO
ZD 00001	CA	148	USS NEWPORT NEWS
ZA 00002	CGN	9	USS LONG BEACH
ZD 00001	DD	744	USS BLUE
ZB 00001	DD	746	ROCS LO YANG
ZD 00001	DD	752	USS CUNNINGHAM ALFRE
ZD 00001	DD	754	USS EVANS FRANK E
ZB 00001	DD	755	EX-USS JOHN A BOLE
ZD 00001	DD	757	USS PUTNAM
ZB 00001	DD	759	EX-USS LOFBERG
ZB 00002	DD	779	CNS MINISTRO PORTALE
ZB 00001	DD	781	VNS FALCON
ZB 00001	DD	805	ROK CHUNG BUK
ZD 00001	DD	807	USS BENNER
ZD 00003	DD	682	USS PORTERFIELD
ZD 00001	DD	685	USS PICKING
ZD 00001	DD	699	USS WALDRON
ZB 00002	DD	697	CNS MINISTRO ZENTENO
ZD 00001	DD	723	USS WALKE
ZB 00001	DD	729	EX-USS LYMAN SWENSON
ZB 00001	DD	728	EX-USS MANSFIELD
ZA 00001	AD	14	USS DIXIE
ZA 00001	AS	12	USS SPERRY
ZD 00001	AS	15	USS BUSHNELL
ZA 00001	AS	16	USS GILMORE
ZD 00001	AS	17	USS NEREUS
ZA 00001	AS	18	USS ORION
ZA 00001	AS	19	USS PROTEUS
ZD 00001	AD	16	USS CASCADE
ZA 00001	AD	17	USS PIEDMONT
ZA 00001	AD	18	USS SIERRA
ZD 00001	AD	24	USS EVERGLADES
ZA 00001	AD	37	USS GOMPERS SAMUEL
ZA 00002	DDG	3	USS JOHN KING
ZA 00002	DDG	4	USS LAWRENCE
ZA 00002	DDG	5	USS RICKETTS CLAUDE
ZA 00002	DDG	6	USS BARNEY
ZA 00002	DDG	8	USS LYNDE MCCORMICK
ZA 00002	DDG	9	USS TOWERS
ZA 00002	DDG	10	USS SAMPSON
ZA 00002	DDG	12	USS ROBISON
ZA 00002	DDG	14	USS BUCHANAN
ZA 00002	DDG	15	USS BERKELEY
ZA 00002	DDG	16	USS STRAUSS JOSEPH
ZA 00002	DDG	17	USS CONYNGHAM
ZA 00002	DDG	19	USS TATTNALL
ZA 00002	DDG	20	USS GOLDSBOROUGH
ZA 00002	DDG	21	USS COCHRANE
ZA 00002	DDG	22	USS STODDERT BENJAMI
ZA 00001	AS	31	USS DUNLEY
ZA 00002	DDG	23	USS BYRD RICHARD E
ZA 00002	DDG	24	USS WADDELL
ZA 00001	AS	32	USS HOLLAND
ZA 00001	AS	33	USS LAKE SIMON
ZD 00001	ASR	7	USS CHANTICLEER
ZA 00001	AS	34	USS CANOPUS
ZD 00001	AOG	55	USS NESPELEN
ZD 00001	AOG	56	USS NOXUBEE
ZA 00001	AO	106	USNS NAVASOTA
ZA 00001	AO	98	USS CALOOSAHATCHEE
ZD 00001	AO	97	USS ALLAGASH
ZA 00001	AO	99	USS CANISTEO
ZD 00001	AO	32	USS GUADALUPE
ZB 00001	AOG	8	CNS BEAGLE
ZA 00001	AO	51	USS ASHTABULA
ZD 00001	AO	54	USS CHIKASKIA

ZB	00001	TKDE	1	TURKISH NAVY
ZB	00001	DD	794	BNS SANTA CATARINA
ZB	00001	PF	107	RTNS TAPI
ZB	00001	DD	544	TNS ISKENDERUN
ZB	00001	PF	108	RTNS KRIRIRAT
ZB	00001	ICLG	4	INS VENETO ITALY
ZB	00001	DD	872	TNS ADATEPE
ZB	00001	DD	777	IINS BABR
ZA	00001	WAGB	10	USCG POLOR STAR
ZB	00001	TKDE	2	TNS TURKISH DESTROYE
ZB	00001	DD	780	IINS PALANG
ZB	00001	DD	770	BNS ESPIRITO SANTO
ZB	00001	DD	758	BNS RIO GRANDE DO NO
ZA	00001	WHEC	715	USCG HAMILTON
ZA	00001	WHEC	718	USCG CHASE
ZA	00001	WHEC	719	USCG BOUTWELL
ZA	00001	WTR	615	USCG RELIANCE
ZA	00002	WHEC	618	USCG ACTIVE
ZA	00001	WHEC	616	USCG DILIGENCE
ZA	00001	WHEC	617	USCG VIGILANT
ZA	00001	WHEC	620	USCG RESOLUTE
ZA	00001	WHEC	619	USCG CONFIDENCE
ZA	00001	WHEC	624	USCG DAUNTLESS
ZA	00001	WHEC	621	USCG VALIANT
ZA	00001	WHEC	626	USCG DEPENDABLE
ZA	00001	WHEC	627	USCG VIGOROUS
ZA	00001	WHEC	628	USCG DURABLE
ZA	00001	WHEC	629	USCG DECISIVE
ZA	00001	WHEC	630	USCG ALERT
ZA	00002	WAGB	282	USCG NORTHWIND
ZA	00002	WAGB	281	USCG WESTWIND
ZA	00001	WHEC	716	USCG DALLAS
ZA	00001	WLM	686	USCG RED BEECH
ZA	00001	WLM	685	USCG RED WOOD
ZA	00001	WLM	689	USCG RED OAK
ZA	00001	WLM	687	USCG RED BIRCH
ZA	00001	WLM	688	USCG RED CEDAR
ZC	00002	AFDB	7	USS LOS ALAMOS
ZA	00001	WHEC	726	USCG MIDGETT
ZA	00001	WAGB	11	USCG POLOR SEA
ZA	00001	WHEC	717	USCG MELLON
ZA	00002	WHEC	622	USCG COURAGEOUS
ZA	00001	WHEC	721	USCG GALLATIN
ZA	00002	WHEC	722	USCG MORGENTHAU
ZA	00001	WHEC	723	USCG RUSH
ZA	00001	ASR	14	USS PETREL
ZA	00001	WHEC	725	USCG JARVIS
ZA	00001	ARS	38	USS BOLSTER

Summary data

	AC	QPA
ZA	0204	00243
ZB	0056	00061
ZC	0004	00005
ZD	0076	00083
TOTAL	0340	00392

Wind Direction and Speed Indicator Unit, Type B
NSN 4A 6660 00-691-1530
APL 381510036

AC QPA	Ship Hull No. and Name		
ZD 00002	LPA	227	USS RENVILLE
ZB 00001	ICLG	2	INS DUILIO ITALY
ZB 00002	DD	444	ARG ROSALES
ZB 00001	ICLG	3	INS DORIA
ZB 00002	DD	765	TNS TINAZTEPE
ZB 00002	DD	694	RHN MIAOULIS
ZB 00003	DD	711	SNS CHURRUCA
ZB 00002	DD	882	SNS GRAVINA
ZB 00002	LSD	25	SNS GALICIA
ZB 00001	DD	743	RHN THEMISTOCLES
ZB 00002	DD	745	ROCS HSIANG YANG
ZB 00003	DD	857	ROCS HWA YANG
ZB 00003	LSD	21	RHN NAFKRATOUSSA
ZB 00002	DD	838	ROCS FU YANG
ZB 00003	DD	787	TNS GAYRET
ZB 00002	DD	841	SNS BLAS DE LEZO
ZB 00001	DD	879	SNS LANGARA
ZB 00003	DD	889	SNS MENDEZ NUNEZ
ZB 00002	DD	703	ROK DAE GU
ZB 00003	DD	761	BNS ALAGOAS
ZB 00002	DD	776	BNS SERGIPE
ZC 00005	AFLSP	2	TEST COSAL
ZC 00005	ACONV	2	TEST SHIP
ZB 00005	DEG	711	SNS SPANISH SHIPS
ZB 00003	DD	875	BNS KARCILIO DIAS
ZB 00001	DD	887	BNS MARIZ E BARROS
ZA 00003	AGM	8	USNS WHEELING
ZA 00002	ARC	3	USNS AEOLUS
ZA 00001	ARC	6	USNS ALBERT J MYER
ZD 00001	LKA	57	USS CAPRICORNUS
ZD 00001	LKA	103	USS RANKIN
ZA 00003	WHEC	724	USCG HUNRO
ZD 00003	AF	54	USS PICTOR
ZD 00003	AF	56	USS DENEBOLA
ZA 00004	AF	58	USNS RIGEL
ZD 00002	AF	59	USS VEGA
ZD 00002	IX	311	USS BENEWAH
ZA 00004	AVM	1	USS NORTON SOUND
ZA 00003	AD	34	USS BRYCE CANYON
ZD 00002	LPA	210	USS TELFAIR
ZD 00001	LPA	222	USS PICKAWAY
ZD 00001	LPA	237	USS BEXAR
ZD 00005	LPA	249	USS MARION FRANCIS
ZD 00001	AK	279	USNS NORWALK
ZA 00001	AG	164	USNS KINGSPORT
ZA 00001	AK	280	USNS FURMAN
ZA 00001	AK	281	USNS VICTORIA
ZD 00001	AK	259	USS ALCOR
ZD 00002	AKS	32	USS ALTAIR
ZD 00002	AK	260	USS BETELGEUSE
ZA 00002	AGOR	11	USNS MIZAR
ZB 00001	ARS	7	ROCS TA-HU
ZA 00001	ARS	39	USS CONSERVER
ZD 00002	LSD	16	USS CABILDO
ZD 00001	LSD	27	USS WHETSTONE
ZA 00001	LSD	30	USS FORT SNELLING
ZA 00001	LSD	34	USS HERMITAGE
ZD 00009	CVS	10	USS YORKTOWN
ZD 00011	CVS	11	USS INTREPID
ZD 00005	CVS	12	USS HORNET
ZA 00013	AVT	16	USS LEXINGTON
ZD 00007	CVS	20	USS BENNINGTON
ZD 00015	CV	31	USS BON HOMME RICHAR
ZD 00008	CVS	38	USS SHANGRI LA
ZA 00016	CV	41	USS MIDWAY
ZA 00001	CV	43	USS CORAL SEA

ZD	00007	AGMR	2	USS ARLINGTON
ZD	00003	CC	2	USS WRIGHT
ZA	00011	CV	59	USS FORRESTAL
ZA	00002	CV	60	USS SARATOGA
ZA	00009	CV	61	USS RANGER
ZA	00001	CV	62	USS INDEPENDENCE
ZA	00014	CVN	65	USS ENTERPRISE
ZA	00019	CV	66	USS AMERICA
ZA	00017	CV	67	USS KENNEDY JOHN F
ZA	00007	CG	10	USS ALBANY
ZA	00012	CG	11	USS CHICAGO
ZD	00007	CA	148	USS NEWPORT NEWS
ZA	00003	DD	743	USS SOUTHERLAND
ZB	00002	DD	746	ROCS LO YANG
ZD	00002	DD	744	USS BLUE
ZD	00003	DD	752	USS CUNNINGHAM ALFRE
ZD	00002	DD	754	USS EVANS FRANK E
ZB	00002	DD	755	EX-USS JOHN A BOLE
ZD	00002	DD	757	USS PUTNAM
ZB	00002	DD	759	EX-USS LOFBERG
ZB	00002	DD	779	CNS MINISTRO PORTALE
ZB	00002	DD	781	VNS FALCON
ZB	00003	DD	782	ROCS CHAO YANG
ZB	00003	DD	783	HNS TOMBAZIS
ZA	00003	DD	784	USS MCKEAN
ZA	00003	DD	785	USS HENDERSON
ZB	00004	DD	786	ROCS KAI YANG
ZB	00001	DD	787	ROCS CHIEN YANG
ZD	00003	DD	788	USS HOLLISTER
ZB	00003	DD	790	ROCS LAO YANG
ZB	00002	DD	805	ROK CHUNG BUK
ZD	00003	DD	806	USS HIGBEE
ZD	00002	DD	808	USS BUCKLEY DENNIS J
ZD	00002	DD	682	USS PORTERFIELD
ZD	00002	DD	685	USS PICKING
ZB	00002	DD	697	CNS MINISTRO ZENTENO
ZD	00003	DD	699	USS WALDRON
ZB	00002	DD	714	EX-DD 714
ZD	00001	DD	715	USS WOOD WILLIAM H
ZB	00003	DD	716	ROPNS TARIQ
ZD	00003	DD	717	USS CHANDLER THEODOR
ZB	00002	DD	719	ROPNS TAIMUR
ZD	00002	DD	723	USS WALKE
ZB	00002	DD	729	EX-USS LYMAN SWENSON
ZB	00002	DD	728	EX-USS MANSFIELD
ZA	00002	AD	14	USS DIXIE
ZA	00001	AS	12	USS SPERRY
ZD	00003	AS	15	USS BUSHNELL
ZA	00003	AS	16	USS GILMORE
ZD	00001	AS	17	USS NEREUS
ZA	00003	AS	18	USS ORION
ZD	00001	AD	16	USS CASCADE
ZA	00003	AD	17	USS PIEDMONT
ZD	00001	AD	24	USS EVERGLADES
ZA	00004	AD	37	USS GOMPERS SAMUEL
ZA	00007	DDG	34	USS SOMERS
ZA	00001	DD	948	USS MORTON
ZA	00003	DDG	33	USS PARSONS
ZA	00004	DDG	4	USS LAWRENCE
ZA	00002	DDG	6	USS BARNEY
ZA	00004	DDG	8	USS LYNDE MCCORMICK
ZA	00002	DDG	9	USS TOWERS
ZA	00002	DDG	13	USS HOEL
ZA	00004	DDG	14	USS BUCHANAN
ZA	00005	DDG	15	USS BERKELEY
ZA	00005	DDG	16	USS STRAUSS JOSEPH
ZA	00003	DDG	17	USS CONYNGHAM
ZA	00003	DDG	18	USS SEMMES
ZA	00004	DDG	19	USS TATTNALL
ZA	00003	DDG	21	USS COCHRANE
ZA	00003	AS	31	USS HUNLEY
ZA	00005	DDG	23	USS BYRD RICHARD E
ZA	00005	DDG	24	USS WADDELL
ZA	00004	FFG	1	USS BROOKE
ZA	00005	FFG	2	USS RAMSEY
ZA	00005	FFG	3	USS SCHOFIELD
ZA	00004	FFG	4	USS TALBOT
ZA	00005	AS	32	USS HOLLAND

ZA 00002	AS	33	USS LAKE SIMON
ZA 00002	FFG	5	USS PAGE RICHARD L
ZA 00005	FFG	6	USS FURER
ZD 00001	ASR	7	USS CHANTICLEER
ZA 00003	AS	34	USS CANOPUS
ZB 00001	AOG	50	ARCS TUMACO
ZD 00001	AOG	55	USS NESPELEN
ZD 00001	AOG	56	USS NOXUBEE
ZD 00002	AO	97	USS ALLAGASH
ZA 00002	AO	98	USS CALOOSAHATCHEE
ZA 00001	AO	99	USS CANISTEO
ZD 00002	AO	32	USS GUADALUPE
ZB 00001	AOG	8	CNS BEAGLE
ZA 00002	AO	51	USS ASHTABULA
ZD 00001	AO	54	USS CHIKASKIA
ZA 00001	AO	57	USNS MARIAS
ZD 00002	AO	60	USS NANTAHALA
ZD 00002	AO	61	USS SEVERN
ZD 00002	AO	64	USS TOLOVANA
ZD 00001	AO	63	USS CHIPOLA
ZD 00004	LCC	7	USS MOUNT MCKINLEY
ZD 00002	LCC	17	USS TACONIC
ZA 00002	AFS	1	USS MARS
ZA 00003	AOE	1	USS SACRAMENTO
ZA 00004	AOE	2	USS CAMDEN
ZA 00004	AFS	3	USS NIAGARA FALLS
ZA 00003	AFS	4	USS WHITE PLAINS
ZA 00005	AFS	5	USS CONCORD
ZA 00005	AD	38	USS PUGET SOUND
ZA 00005	AE	26	USS KILAUEA
ZA 00005	AE	27	USS BUTTE
ZA 00009	LCC	19	USS BLUERIDGE
ZA 00003	AGOR	13	USNS BARTLETT
ZA 00003	AGOR	12	USNS DESTEIGUER
ZA 00005	AGS	29	USNS CHAUVENET
ZA 00006	LKA	113	USS CHARLESTON
ZA 00006	LKA	114	USS DURHAM
ZA 00007	LKA	115	USS MOBILE
ZA 00006	LKA	116	USS ST LOUIS
ZA 00005	AOE	3	USS SEATTLE
ZA 00007	AOR	1	USS WICHITA
ZA 00003	AOR	2	USS MILWAUKEE
ZA 00004	AS	36	USS SPEAR L Y
ZA 00003	AO	143	USS NEOSHO
ZA 00002	AO	144	USNS MISSISSINEWA
ZA 00002	AO	145	USNS MASSAYAMPA
ZA 00002	AO	146	USS KAWISHIWI
ZA 00002	AO	147	USS TRUCKEE
ZA 00002	AO	148	USS PONCHATOULA
ZB 00001	ATF	106	EX-ATF 106
ZA 00001	ATF	162	USS SHAKORI
ZA 00003	LPD	1	USS RALEIGH
ZA 00003	LPD	2	USS VANCOUVER
ZA 00006	AGF	3	USS LA SALLE
ZA 00004	LPD	4	USS AUSTIN
ZA 00003	LPD	5	USS OGDEN
ZA 00003	LPD	6	USS DULUTH
ZA 00008	LPH	9	USS GUAM
ZA 00007	LPD	7	USS CLEVELAND
ZA 00007	LPD	8	USS DUBUQUE
ZA 00008	LPD	9	USS DENVER
ZA 00008	LPD	10	USS JUNEAU
ZA 00008	LPD	11	USS CORONADO
ZA 00008	LPD	12	USS SHREVEPORT
ZA 00008	LPD	13	USS NASHVILLE
ZA 00008	LPH	10	USS TRIPOLI
ZA 00006	LPD	14	USS TRENTON
ZA 00006	LPD	15	USS PONCE
ZA 00012	LPH	11	USS NEW ORLEANS
ZA 00006	LSD	36	USS ANCHORAGE
ZD 00002	AGHR	1	USS ANNAPOLIS
ZA 00008	LPH	3	USS OKINAWA

ZA	00008	LPH	7	USS GUADALCANAL
ZD	00004	MCS	2	USS OZARK
ZA	00002	AE	25	USS HALEAKALA
ZD	00003	AE	14	USS FIREDRAKE
ZA	00002	AE	24	USS PYRO
ZD	00004	AF	10	USS ALDEBARAN
ZD	00002	LKA	19	USS YHUBAN
ZA	00002	LKA	112	USS TULARE
ZA	00004	AR	6	USS AJAX
ZA	00002	AE	21	USS SURIBACHI
ZA	00001	AE	22	USS MAUNA KEA
ZA	00004	AGM	20	USNS REDSTONE
ZA	00004	AGM	19	USNS VANGUARD
ZA	00006	FF	1098	USS GLOVER
ZD	00003	AGR	1	USS GUARDIAN
ZA	00007	LCC	20	USS MOUNT WHITNEY
ZA	00006	LKA	117	USS EL PASO
ZA	00007	LPH	12	USS INCHON
ZA	00006	LSD	37	USS PORTLAND
ZA	00006	LSD	38	USS PENSACOLA
ZA	00006	LSD	39	USS MOUNT VERNON
ZA	00004	LST	1180	USS MANITOWOC
ZA	00005	LST	1181	USS SUMTER
ZA	00004	LST	1182	USS FRESNO
ZA	00004	LST	1183	USS PEORIA
ZA	00005	LST	1184	USS FREDERICK
ZA	00004	LST	1185	USS SCHENECTADY
ZA	00004	LST	1186	USS CAYUGA
ZA	00005	LST	1187	USS TUSCALOOSA
ZA	00005	LST	1188	USS SAGINAW
ZA	00005	LST	1189	USS SAN BERNARDINO
ZA	00005	LST	1190	USS BOULDER
ZA	00005	LST	1191	USS RACINE
ZA	00005	LST	1192	USS SPARTANBURG COUN
ZA	00005	LST	1193	USS FAIRFAX COUNTY
ZA	00005	LST	1194	USS LA MOURE COUNTY
ZA	00005	FF	1078	USS JOSEPH HEWES
ZA	00005	FF	1079	USS BOWEN
ZA	00005	FF	1080	USS PAUL
ZA	00005	FF	1081	USS AYLWIN
ZA	00005	FF	1082	USS ELMER MONTGOMERY
ZA	00006	FF	1083	USS COOK
ZA	00004	FF	1084	USS MCCANDLESS
ZA	00005	FF	1085	USS BEARY B DONALD
ZA	00005	FF	108_	USS BREWTON
ZA	00005	FF	1087	USS KIRK
ZA	00005	FF	1088	USS BARBEY
ZA	00005	FF	1089	USS BROWN JESSE L
ZA	00003	FF	1090	USS AINSWORTH
ZA	00005	FF	1091	USS MILLER
ZA	00005	FF	1092	USS HART THOMAS C
ZA	00005	FF	1093	USS CAPODANNO
ZA	00005	FF	1094	USS PHARRIS
ZA	00005	FF	1095	USS TRUETT
ZA	00005	FF	1096	USS VALDEZ
ZA	00003	FF	1097	USS MOINESTER
ZA	00005	AE	28	USS SANTA BARBARA
ZA	00003	AE	29	USS MOUNT HOOD
ZA	00005	AE	32	USS FLINT
ZA	00005	AE	33	USS SHASTA
ZA	00005	AE	34	USS MOUNT BAKER
ZA	00004	AFS	6	USS SAN DIEGO
ZA	00004	AFS	7	USS SAN JOSE
ZA	00004	AOE	4	USS DETROIT
ZA	00003	AOR	3	USS KANSAS CITY
ZA	00005	AOR	4	USS SAVANNAH
ZA	00004	AOR	5	USS WABASH
ZA	00005	AOR	6	USS KALAMAZOO
ZA	00004	AS	37	USS DIXON
ZA	00005	AGS	32	USNS HARKNESS
ZA	00005	LST	1195	USS BARBOUR COUNTY
ZA	00005	LST	1196	USS HARLAN COUNTY
ZA	00005	LST	1197	USS BARNSTABLE COUNT
ZA	00005	LST	1198	USS BRISTOL COUNTY
ZA	00005	AE	35	USS KISKA
ZA	00000	AS	39	USS EMORY S LAND

ZA 00000	AS	40	USS FRANK CABLE
ZA 00003	DD	817	USS CORRY
ZB 00003	DD	818	ROK TAEJON
ZB 00003	DD	819	EX-USS HOLDER
ZD 00003	DD	820	USS RICH
ZA 00003	DD	821	USS JOHNSTON
ZA 00001	DD	822	USS MCCARD ROBERT H
ZD 00003	DD	824	USS BASILONE
ZA 00003	DD	825	USS CARPENTER
ZD 00003	DD	826	EX-USS AGERHOLM
ZA 00002	DD	827	USS OWENS ROBERT A
ZB 00002	DD	830	ROK JEON BUK
ZB 00003	DD	832	ROCS LIAO YANG
ZB 00004	DD	833	ROCS HAN YANG
ZD 00003	DD	835	USS CECIL CHARLES P
ZD 00001	DD	836	USS MACKENZIE GEORGE
ZB 00003	DD	837	ROCS TE YANG
ZB 00004	DD	839	ROCS SHEN YANG
ZD 00003	DD	840	USS GLENNON
ZA 00003	DD	842	USS FISKE
ZD 00005	DD	844	USS PERRY
ZD 00004	DD	845	USS RAUSELL
ZD 00003	DD	847	USS WILSON ROBERT L
ZB 00003	DD	849	ROK KWANG JU
ZD 00001	DD	850	USS KENNEDY JOSEPH P
ZB 00003	DD	851	RHN KOUNTOURIOTIS
ZB 00003	DD	852	EX-USS MASON LEONARD
ZA 00001	DD	862	USS VOGELGESANG
ZA 00003	DD	863	USS STEINAKER
ZD 00002	DD	864	USS ELLISON HAROLD J
ZD 00003	DD	865	USS HARE CHARLES R
ZA 00002	DD	866	USS CONE
ZD 00003	DD	871	USS DAMATO
ZD 00003	DD	873	USS HAWKINS
ZA 00003	DD	876	USS ROGERS
ZB 00002	DD	877	ARG PY
ZD 00001	DD	878	USS VESOLE
ZA 00003	DD	880	USS DYESS
ZD 00003	DD	881	USS BORDELON
ZD 00004	DD	884	USS PARKS FLOYD B
ZD 00003	DD	885	USS CRAIG JOHN R
ZA 00004	DD	886	USS ORLECK
ZD 00003	DD	890	USS MEREDITH
ZA 00003	DDG	32	USS JONES JOHN PAUL
ZA 00002	DD	933	USS BARRY
ZA 00006	DDG	31	USS DECATUR
ZA 00001	DD	937	USS DAVIS
ZA 00001	DD	938	USS INGRAM JONAS
ZA 00001	DD	940	USS MANLEY
ZA 00004	DD	943	USS BLANDY
ZD 00004	DDG	35	USS MITSCHER
ZD 00003	DDG	36	USS MCCAIN JOHN S
ZA 00006	DDG	37	USS FARRAGUT
ZA 00005	DDG	38	USS LUCE
ZA 00005	DDG	39	USS MACDONOUGH
ZA 00002	DDG	42	USS MAHAN
ZA 00002	DDG	43	USS DAHLGREN
ZA 00002	DDG	44	USS PRATT WILLIAM V
ZA 00001	DDG	45	USS DEWEY
ZA 00006	CG	16	USS LEAHY
ZA 00004	CG	17	USS YARNELL HARRY E
ZA 00006	CG	18	USS WORDEN
ZA 00006	CG	19	USS DALE
ZA 00006	CG	20	USS TURNER RICHMOND
ZA 00004	CG	21	USS GRIDLEY
ZA 00005	CG	22	USS ENGLAND
ZA 00006	CG	23	USS HALSEY
ZA 00006	CG	24	USS REEVES
ZD 00008	CG	26	USS BELKNAP
ZA 00006	CG	27	USS DANIELS JOSEPHUS
ZA 00006	CG	28	USS WAINWRIGHT
ZA 00005	CG	29	USS JOUETT
ZA 00006	CG	30	USS HORNE
ZA 00005	CG	31	USS STERETT
ZA 00006	CG	32	USS STANDLEY WILLIAM
ZA 00006	CG	33	USS FOX

ZA	00006	CG	34	USS BIDDLE
ZA	00006	CGN	35	USS TRUXTUN
ZA	00004	FF	1037	USS BRONSTEIN
ZA	00004	FF	1038	USS MCCLOY
ZA	00004	FF	1040	USS GARCIA
ZA	00005	FF	1041	USS BRADLEY
ZA	00004	FF	1043	USS MCDONNELL EDWARD
ZA	00004	FF	1044	USS BRUMBY
ZA	00003	FF	1045	USS DAVIDSON
ZA	00004	FF	1047	USS VOGE
ZA	00004	FF	1048	USS SAMPLE
ZA	00004	FF	1049	USS KOELSCH
ZA	00004	FF	1050	USS DAVID ALBERT
ZA	00005	FF	1051	USS O CALLAHAN
ZA	00005	FF	1052	USS KNOX
ZA	00005	FF	1053	USS ROARK
ZA	00004	FF	1054	USS GRAY
ZA	00005	FF	1055	USS HEPBURN
ZA	00005	FF	1056	USS CONNOLE
ZA	00005	FF	1057	USS RATHBURNE
ZA	00005	FF	1058	USS MEYERKORD
ZA	00005	FF	1059	USS SIMS W S
ZA	00006	FF	1060	USS LANG
ZA	00005	FF	1061	USS PATTERSON
ZA	00005	FF	1062	USS WHIPPLE
ZA	00005	FF	1063	USS REASONER
ZA	00005	FF	1064	USS LOCKWOOD
ZA	00005	FF	1065	USS STEIN
ZA	00000	FF	1066	USS SHIELDS MARVIN
ZA	00005	FF	1067	USS FRANCIS HAMMOND
ZA	00005	FF	1068	USS VREELAND
ZA	00005	FF	1069	USS BAGLEY
ZA	00005	FF	1070	USS DOWNES
ZA	00005	FF	1071	USS BADGER
ZA	00004	FF	1072	USS BLAKELY
ZA	00005	FF	1073	USS ROBERT E PEARY
ZA	00005	FF	1074	USS HOLT HAROLD E
ZA	00005	FF	1075	USS TRIPPE
ZA	00005	FF	1076	USS FANNING
ZA	00005	FF	1077	USS OUELLET
ZD	00002	AVB	2	USS TALLAHATCHIE COU
ZD	00001	AGP	1174	USS GRAHAM COUNTY
ZA	00005	LST	1179	USS NEWPORT
ZB	00001	DER	251	EX-USS DER 251
ZB	00003	AGP	821	EX-USS AGP 821
ZB	00002	AGP	786	EX-USS AGP 786
ZB	00001	WHEC	386	RPS GREGORIO DE PILA
ZD	00002	LSD	15	USS SHADWELL
ZA	00002	AFS	2	USS SYLVANIA
ZA	00001	ARC	2	USNS NEPTUNE
ZB	00002	ICLG	1	INS GARIBALDI ITALY
ZB	00004	DDG	25	HMA PERTH
ZB	00004	DDG	26	HMA HOBART
ZB	00005	DDG	27	HMA BRISBANE
ZB	00009	DDG	28	FRGS LUTJENS
ZB	00009	DDG	29	FRGS HOLDERS
ZB	00009	DDG	30	FRGS ROMMEL
ZB	00001	DD	869	RHN SACHTOURIS
ZB	00005	DEG	7	SNS BALEARES
ZB	00004	SPDD	21	SNS MARQUESA DE LA E
ZB	00002	DD	656	TNS IZMIR
ZB	00005	DEG	8	SNS ANDALUCIA
ZB	00005	DEG	9	SNS CATALUNA
ZB	00005	DEG	10	SNS ASTURIAS
ZB	00005	DEG	11	SNS EXTRAMADURA
ZB	00002	DD	544	TNS ISKENDERUN
ZB	00001	DD	872	TNS ADATEPE
ZB	00001	DD	777	TNS BABR

ZB	00002	DD	780	IINS PALANG
ZB	00002	DD	770	BNS ESPIRITO SANTO
ZB	00002	DD	758	BNS RIO GRANDE DO NO
ZA	00003	WHEC	715	USCG HAMILTON
ZA	00003	WHEC	717	USCG MELLON
ZA	00003	WHEC	718	USCG CHASE
ZA	00004	WHEC	720	USCG SHERMAN
ZA	00003	WHEC	719	USCG BOUTWELL
ZA	00002	WTR	615	USCG RELIANCE
ZA	00002	WHEC	616	USCG DILIGENCE
ZA	00002	WHEC	617	USCG VIGILANT
ZA	00002	WHEC	618	USCG ACTIVE
ZA	00002	WHEC	619	USCG CONFIDENCE
ZA	00002	WHEC	620	USCG RESOLUTE
ZA	00002	WHEC	621	USCG VALIANT
ZA	00002	WHEC	624	USCG DAUNTLESS
ZA	00002	WHEC	625	USCG VENTUROUS
ZA	00002	WHEC	626	USCG DEPENDABLE
ZA	00002	WHEC	627	USCG VIGOROUS
ZA	00003	WHEC	628	USCG DURABLE
ZA	00002	WHEC	629	USCG DECISIVE
ZA	00002	WHEC	630	USCG ALERT
ZA	00001	WAGB	282	USCG NORTHWIND
ZA	00001	WAGB	281	USCG WESTWIND
ZA	00002	WLM	685	USCG RED WOOD
ZA	00001	WLM	686	USCG RED BEECH
ZA	00001	WLM	688	USCG RED CEDAR
ZA	00001	WLM	687	USCG RED BIRCH
ZA	00002	WLM	689	USCG RED OAK
ZA	00004	WHEC	622	USCG COURAGEOUS
ZA	00002	DDG	11	USS SELLERS
ZA	00003	WHEC	721	USCG GALLATIN
ZA	00003	WHEC	722	USCG MORGENTHAU
ZA	00003	WHEC	723	USCG RUSH
ZA	00003	WHEC	725	USCG JARVIS
ZA	00001	WHEC	716	USCG DALLAS
ZA	00001	AD	18	USS SIERRA

Summary data

	AC	QPA
ZA	0305	01278
ZB	0080	00218
ZC	0002	00010
ZD	0086	00250
TOTAL	0473	01756

Wind Direction and Speed Recorder, Type B
NSN 4A 6660 00-853-1923
APL 381510060

AC	QPA	Ship Hull No. and Name		
ZD	00001	CVS	20	USS BENNINGTON
ZD	00000	CV	34	USS ORISKANY
ZA	00001	CV	41	USS MIDWAY
ZA	00001	CV	63	USS KITTY HAWK
ZA	00001	CV	67	USS KENNEDY JOHN F
ZA	00001	CVN	68	USS NIMITZ
ZA	00001	CVN	69	USS EISENHOWER D D
ZA	00001	LHA	1	USS TARAWA
ZA	00001	LHA	2	USS SAIPAN
ZA	00001	LHA	3	USS BELLEAU WOOD
ZA	00001	CVN	70	USS CARL VINSON
ZA	00001	LHA	4	USS NASSAU
ZA	00001	LHA	5	USS PELELIU
ZA	00002	FFG	1	USS BROOKE

Summary data

	AC	QPA
ZA	0012	00013
ZD	0002	00001
TOTAL	0014	00014

Crosswind/Headwind Indicator
NSN 4A 6660-088-7377
APL 381510063

AC	QPA	Ship Hull No. and Name		
ZA	00000	AVT	16	USS LEXINGTON
ZA	00001	CV	41	USS MIDWAY
ZA	00005	CV	43	USS CORAL SEA
ZA	00002	CV	63	USS KITTY HAWK
ZA	00002	CV	64	USS CONSTELLATION
ZA	00002	CVN	65	USS ENTERPRISE
ZA	00002	CV	66	USS AMERICA
ZA	00002	CV	67	USS KENNEDY JOHN F
ZA	00002	CVN	68	USS NIMITZ
ZA	00002	CVN	69	USS EISENHOWER D D
ZA	00002	CVN	70	USS CARL VINSON

Summary data

	AC	QPA
ZA	0011	00022
TOTAL	0011	00022

Crosswind/Headwind Computer
NSN 4A 6660 00-088-7376
APL 381510064

AC	QPA	Ship Hull No. and Name		
ZA	00001	CV	41	USS MIDWAY
ZA	00001	CV	43	USS CORAL SEA
ZA	00001	CV	63	USS KITTY HAWK
ZA	00001	CV	64	USS CONSTELLATION
ZA	00001	CVN	65	USS ENTERPRISE
ZA	00001	CV	66	USS AMERICA
ZA	00001	CV	67	USS KENNEDY JOHN F
ZA	00001	CVN	68	USS NIMITZ
ZA	00001	CVN	69	USS EISENHOWER D D
ZA	00001	CVN	70	USS CARL VINSON

Summary data

	AC	QPA
ZA	0010	00010
TOTAL	0010	00010

Wind Direction and Speed Detector Unit, Type F
NSN 4A 6660 00-926-1324
APL 381510065

AC	QPA	Ship Hull No. and Name		
ZB	00000	IDDG	4	INS ARDITO
ZB	00000	IDDG	3	INS AUDACE
ZB	00001	DD	711	SNS CHURRUCA
ZB	00001	DD	882	SNS GRAVINA
ZB	00001	DD	789	TNS GAYRET
ZB	00001	DD	841	SNS BLAS DE LEZO
ZB	00001	DD	879	SNS LANGARA
ZB	00001	DD	889	SNS MENDEZ NUNEZ
ZC	00002	AFLSP	2	TEST COSAL
ZC	00002	ACONV	2	TEST SHIP
ZB	00002	DEG	711	SNS SPANISH SHIPS
ZB	00002	DD	853	TNS CAKMAK
ZB	00001	DD	875	BNS MARCILIO DIAS
ZB	00001	DD	887	BNS MARIZ E BARROS
ZA	00002	CV	67	USS KENNEDY JOHN F
ZA	00005	CVN	68	USS NIMITZ
ZD	00001	CA	73	USS SAINT PAUL
ZA	00002	CG	10	USS ALBANY
ZA	00001	DD	743	USS SOUTHERLAND
ZA	00001	DD	763	USS LAWE WILLIAM C
ZB	00001	DD	782	ROCS CHAO YANG
ZB	00001	DD	783	HNS TOMBAZIS
ZA	00001	DD	784	USS MCKEAN
ZA	00002	DD	785	USS HENDERSON
ZB	00001	DD	786	ROCS KAI YANG
ZB	00001	DD	787	ROCS CHIEN YANG
ZD	00001	DD	788	USS HOLLISTER
ZB	00001	DD	790	ROCS LAO YANG
ZD	00001	DD	806	USS HIGBEE
ZD	00001	DD	808	USS BUCKLEY DENNIS J
ZB	00001	DD	714	EX-DD 714
ZD	00001	DD	715	USS WOOD WILLIAM H
ZB	00001	DD	716	ROPNS TARIQ
ZD	00002	DD	717	USS CHANDLER THEODOR
ZB	00001	DD	719	ROPNS TAIMUR
ZA	00002	DDG	34	USS SOMERS
ZA	00001	DD	948	USS MORTON
ZA	00002	DDG	33	USS PARSONS
ZA	00001	DD	950	USS EDWARDS RICHARD
ZA	00002	DDG	18	USS SEMMES
ZA	00002	FFG	1	USS BROOKE
ZA	00002	FFG	2	USS RAMSEY
ZA	00002	FFG	3	USS SCHOFIELD
ZA	00002	FFG	4	USS TALBOT
ZA	00002	FFG	5	USS PAGE RICHARD L
ZA	00002	FFG	6	USS FURER
ZA	00002	AGS	29	USNS CHAUVENET
ZA	00002	LSD	36	USS ANCHORAGE
ZD	00002	MSO	423	USS AVENGE
ZA	00002	MSO	433	USS ENGAGE
ZA	00002	MSO	437	USS ENHANCE
ZA	00002	MSO	438	USS ESTEEM
ZA	00002	MSO	441	USS EXULTANT
ZA	00002	MSO	442	USS FEARLESS
ZA	00002	MSO	443	USS FIDELITY
ZA	00002	MSO	446	USS FORTIFY
ZA	00002	MSO	448	USS ILLUSIVE
ZA	00002	MSO	449	USS IMPERVIOUS
ZA	00002	MSO	456	USS INFLICT
ZA	00002	MSO	488	USS CONQUEST
ZA	00002	MSO	490	USS LEADER
ZA	00002	FF	1098	USS GLOVER
ZA	00002	LSD	37	USS PORTLAND
ZA	00002	LSD	38	USS PENSACOLA
ZA	00002	LSD	39	USS MOUNT VERNON
ZA	00002	LSD	40	USS FORT FISHER
ZA	00002	FF	1078	USS JOSEPH HEWES

ZA	00002	FF	1079	USS BOWEN
ZA	00002	FF	1080	USS PAUL
ZA	00002	FF	1081	USS AYLWIN
ZA	00002	FF	1082	USS ELMER MONTGOMERY
ZA	00002	FF	1083	USS COOK
ZA	00002	FF	1084	USS MCCANDLESS
ZA	00002	FF	1085	USS BEARY B DONALD
ZA	00002	FF	1086	USS BRENTON
ZA	00002	FF	1087	USS KIRK
ZA	00002	FF	1088	USS BARBEY
ZA	00002	FF	1089	USS BROWN JESSE L
ZA	00002	FF	1090	USS AINSWORTH
ZA	00002	FF	1091	USS MILLER
ZA	00002	FF	1092	USS HART THOMAS C
ZA	00002	FF	1093	USS CAPODANNO
ZA	00002	FF	1094	USS PHARRIS
ZA	00002	FF	1095	USS TRUETT
ZA	00002	FF	1096	USS VALDEZ
ZA	00002	FF	1097	USS MOINESTER
ZA	00002	AGS	32	USNS HARKNESS
ZA	00002	ASR	21	USS PIGEON
ZA	00002	ASR	22	USS ORTOLAN
ZA	00002	ATS	1	USS EDENTON
ZA	00002	ATS	2	USS BEAUFORT
ZA	00002	ATS	3	USS BRUNSWICK
ZA	00003	AGOR	16	USNS HAYES
ZA	00002	AOR	7	USS ROANOKE
ZA	00002	AGS	34	USNS WYMAN
ZA	00002	AGS	33	USNS WILKES
ZA	00002	CGN	36	USS CALIFORNIA
ZA	00002	LHA	1	USS TARAWA
ZA	00002	DD	963	USS SPRUANCE
ZA	00002	DD	964	USS PAUL F FOSTER
ZA	00002	DD	965	USS KINKAID
ZA	00002	DD	966	USS HEWITT
ZA	00002	DD	967	USS ELLIOT
ZA	00002	DD	968	USS ARTHUR W RADFORD
ZA	00002	DD	969	USS PETERSON
ZA	00002	DD	970	USS CARON
ZA	00002	DD	971	USS DAVID R RAY
ZA	00002	DD	972	USS OLDENDORF
ZA	00002	DD	973	USS JOHN YOUNG
ZA	00002	DD	974	USS COMTE DE GRASSE
ZA	00002	DD	975	USS O BRIEN
ZA	00002	DD	976	USS MERRILL
ZA	00002	CGN	40	USS MISSISSIPPI
ZA	00002	LHA	2	USS SAIPAN
ZA	00002	CGN	37	USS SOUTH CAROLINA
ZA	00002	CGN	38	USS VIRGINIA
ZA	00002	CGN	39	USS TEXAS
ZA	00001	PHM	1	USS PEGASUS
ZA	00002	LHA	4	USS NASSAU
ZA	00002	FFG	7	USS OLIVER H PERRY
ZA	00001	DD	817	USS CORRY
ZB	00001	DD	818	ROK TAEJON
ZB	00001	DD	819	EX-USS HOLDER
ZD	00001	DD	820	USS RICH
ZA	00001	DD	822	USS MCCARD ROBERT H
ZD	00001	DD	824	USS BASILONE
ZA	00002	DD	825	USS CARPENTER
ZD	00001	DD	826	EX-USS AGERHOLM
ZA	00001	DD	827	USS OWENS ROBERT A
ZD	00001	DD	829	USS FOX MYLES C
ZB	00001	DD	832	ROCS LIAO YANG
ZB	00001	DD	833	ROCS HAN YANG
ZD	00001	DD	835	USS CECIL CHARLES P
ZD	00002	DD	836	USS MACKENZIE GEORGE
ZB	00001	DD	837	ROCS TE YANG
ZB	00001	DD	839	ROCS SHEN YANG
ZA	00001	DD	842	USS FISKE
ZD	00001	DD	844	USS PERRY
ZD	00001	DD	845	USS BAUSELL
ZD	00001	DD	846	USS OZBOURN
ZD	00001	DD	847	USS WILSON ROBERT L
ZB	00001	DD	849	ROK KWANG JU
ZB	00001	DD	851	RHN KOUNTOURIOTIS
ZB	00001	DD	852	EX-USS MASON LEONARD
ZA	00001	DD	862	USS VOGELGESANG

ZA	00001	DD	863	USS STEINAKER
ZD	00001	DD	864	USS ELLISON HAROLD J
ZD	00003	DD	865	USS WARE CHARLES R
ZA	00001	DD	866	USS CONE
ZD	00001	DD	867	USS STRIBLING
ZA	00002	AD	177	AO 177
ZD	00001	DD	871	USS DAHATO
ZD	00001	DD	873	USS HAWKINS
ZA	00001	DD	876	USS ROGERS
ZD	00001	DD	878	USS VESOLE
ZA	00001	DD	880	USS DYESS
ZD	00001	DD	881	USS BORDELON
ZA	00001	DD	883	USS PERRY NEWMAN K
ZD	00001	DD	884	USS PARKS FLOYD B
ZD	00001	DD	885	USS CRAIG JOHN R
ZB	00002	DD	994	EX-DD 994
ZD	00001	DD	890	USS MEREDITH
ZA	00002	DDG	32	USS JONES JOHN PAUL
ZA	00001	DD	933	USS BARRY
ZA	00002	DDG	31	USS DECATUR
ZA	00001	DD	937	USS DAVIS
ZA	00001	DD	938	USS INGRAM JONAS
ZA	00002	DD	940	USS MANLEY
ZA	00001	DD	943	USS BLANDY
ZD	00002	DDG	35	USS MITSCHER
ZD	00002	DDG	36	USS MCCAIN JOHN S
ZA	00002	DDG	37	USS FARRAGUT
ZA	00002	DDG	38	USS LUCE
ZA	00002	DDG	39	USS MACDONOUGH
ZA	00002	DDG	40	USS COONTZ
ZA	00002	DDG	41	USS KING
ZA	00002	DDG	42	USS MAHAN
ZA	00002	DDG	43	USS DAHLGREN
ZA	00002	DDG	44	USS PRATT WILLIAM V
ZA	00002	DDG	45	USS DEWEY
ZA	00002	DDG	46	USS PREBLE
ZA	00002	CG	17	USS YARNELL HARRY E
ZA	00002	CG	18	USS WORDEN
ZA	00002	CG	19	USS DALE
ZA	00002	CG	20	USS TURNER RICHMOND
ZA	00002	CG	21	USS GRIDLEY
ZA	00002	CG	22	USS ENGLAND
ZA	00002	CG	23	USS HALSEY
ZA	00002	CG	24	USS REEVES
ZA	00002	CGN	25	USS BAINBRIDGE
ZA	00002	AD	41	USS YELLOWSTONE
ZA	00002	CG	27	USS DANIELS JOSEPHUS
ZA	00002	CG	28	USS WAINWRIGHT
ZA	00002	CG	29	USS JOUETT
ZA	00002	CG	30	USS HORNE
ZA	00002	CG	31	USS STERETT
ZA	00002	CG	32	USS STANDLEY WILLIAM
ZA	00002	CG	33	USS FOX
ZA	00002	CG	34	USS BIDDLE
ZA	00002	CGN	35	USS TRUXTUN
ZA	00002	FF	1040	USS GARCIA
ZA	00002	FF	1041	USS BRADLEY
ZA	00002	FF	1043	USS MCDONNELL EDWARD
ZA	00002	FF	1044	USS BRUMBY
ZA	00002	FF	1045	USS DAVIDSON
ZA	00002	FF	1047	USS VOGE
ZA	00002	FF	1048	USS SAMPLE
ZA	00002	FF	1049	USS KOELSCH
ZA	00002	FF	1050	USS DAVID ALBERT
ZA	00002	FF	1051	USS O CALL HAN
ZA	00002	FF	1052	USS KNOX
ZA	00002	FF	1053	USS ROARK
ZA	00002	FF	1054	USS GRAY
ZA	00002	FF	1055	USS HEPBURN
ZA	00002	FF	1056	USS CONNOLE
ZA	00002	FF	1057	USS RATHBURNE
ZA	00002	FF	1058	USS MEYERKORD
ZA	00002	FF	1059	USS SIMS W S
ZA	00002	FF	1060	USS LANG
ZA	00002	FF	1061	USS PATTERSON
ZA	00002	FF	1062	USS WHIPPLE
ZA	00002	FF	1063	USS REASONER
ZA	00002	FF	1064	USS LOCKWOOD
ZA	00002	FF	1065	USS STEIN

ZA	00002	FF	1066	USS SHIELDS HARVIN
ZA	00002	FF	1067	USS FRANCIS HAMMOND
ZA	00002	FF	1068	USS VREELAND
ZA	00002	FF	1069	USS BAGLEY
ZA	00002	FF	1070	USS DOWNES
ZA	00002	FF	1071	USS BADGER
ZA	00002	FF	1072	USS BLAKELY
ZA	00002	FF	1073	USS ROBERT E PEARY
ZA	00002	FF	1074	USS HOLT HAROLD E
ZA	00002	FF	1075	USS TRIPPE
ZA	00002	FF	1076	USS FANNING
ZA	00002	FF	1077	USS OUELLET
ZB	00002	DDG	25	HMA PERTH
ZB	00002	DDG	26	HMA HOBART
ZB	00002	DDG	27	HMA BRISBANE
ZB	00002	DDG	28	FRGS LUIJENS
ZB	00002	DDG	29	FRGS HOLDERS
ZB	00002	DDG	30	FRGS ROMMEL
ZB	00002	DEG	7	SNS BALEARES
ZB	00002	DEG	8	SNS ANDALUCIA
ZB	00002	DEG	9	SNS CATALUNA
ZB	00002	DEG	10	SNS ASTURIAS
ZB	00002	DEG	11	SNS EXTRAMADURA
ZB	00002	DD	872	TNS ADATEPE
ZA	00002	DD	977	USS BRISCOE
ZA	00002	DD	978	USS STUMP
ZA	00002	DD	979	USS CONOLLY
ZA	00002	DD	980	USS MOOSBRUGGER
ZA	00002	DD	981	USS JOHN HANCOCK
ZA	00002	DD	982	USS NICHOLSON
ZA	00002	LHA	3	USS BELLEAU WOOD
ZA	00002	AS	39	USS EMORY S LAND
ZA	00002	AS	40	USS FRANK CABLE
ZA	00002	AO	178	AO 178
ZB	00002	PGG	511	PGG 511 AS&SIDDIQ
ZB	00001	LBTS	1	LANDBASEDTESTSITE FL
ZB	00002	PGG	513	PGG 513 AL&FAROUQ
ZA	00002	AD	42	USS ACADIA
ZB	00002	DD	993	EX-DD 993
ZA	00002	DD	988	USS THORN
ZA	00002	CGN	41	USS ARKANSAS
ZA	00002	DD	983	USS JOHN RODGERS
ZA	00002	DD	984	USS LEFTWICH
ZA	00002	DD	985	USS CUSHING
ZA	00002	DD	986	USS HARRY W HILL
ZA	00002	DD	987	USS O BANNON
ZA	00002	DD	989	USS DEYO
ZA	00002	DD	990	USS INGERSOLL
ZA	00002	DD	991	USS FIFE
ZA	00002	DD	992	USS FLETCHER
ZA	00001	PH	2	USS HERCULES
ZA	00001	PHM	3	PHM 3
ZA	00001	PHM	4	PHM 4
ZA	00001	PHM	5	PHM 5
ZA	00001	PHM	6	PHM 6
ZA	00002	LHA	5	USS PELELIU
ZB	00002	PGG	515	PGG 515 ABDUL&AZIZ
ZB	00002	PGG	517	PGG 517 FAISAL
ZB	00002	PGG	519	PGG 519 KHALID
ZB	00002	PGG	521	PGG 521 AMIR
ZB	00002	PGG	523	PGG 523 TARIQ
ZB	00002	PGG	525	PGG 525 OQBAH
ZB	00002	PGG	527	PGG 527 ABU OBAIDAH
ZB	00002	PCG	612	RSNS BADR
ZB	00002	PCG	614	RSNS AL-YARMOOK
ZB	00002	PCG	616	RSNS HITTEEN
ZB	00002	PCG	618	RSNS TABUK
ZB	00002	DD	995	EX-DD 995
ZA	00002	AO	180	AO 180
ZA	00002	AO	186	AO 186

Summary data

	AC	QPA
ZA	0205	00389
ZB	0058	00086
ZC	0002	00004
ZD	0029	00036
TOTAL	0294	00515

Wind Direction and Speed Detector Unit, Type F
NSN 4A 6660 00-926-1324
APL 381510065E

AC	QPA	Ship Hull No.	and Name
ZA	00002	FFG 12	USS GEORGE PHILIP
ZA	00002	FFG 14	USS JOHN H SIDES
ZA	00002	FFG 9	USS WADSWORTH
ZB	00006	ATFG 1	NSCSYDNEY FFG COSMAL
ZA	00002	FFG 10	USS DUNCAN
ZA	00002	FFG 17	FFG 17
ZA	00001	FFG 18	FFG 18
ZA	00002	FFG 8	USS MCINERNEY

Summary data

	AC	QPA
ZA	0007	00013
ZB	0001	00006
TOTAL	0008	00019

Wind Direction and Speed Transmitter, Type F
NSN 4A 6660 00-080-0412
APL 381510066

AC	QPA	Ship Hull No.	and Name
ZB	00000	IDDG 3	INS AUDACE
ZB	00000	IDDG 4	INS ARDITO
ZB	00001	DD 711	SNS CHURRUCA
ZB	00001	DD 882	SNS GRAVINA
ZB	00001	DD 841	SNS BLAS DE LEZO
ZB	00001	DD 879	SNS LANGARA
ZB	00001	DD 889	SNS MENDEZ NUNEZ
ZC	00002	AFLSP 2	TEST CUSAL
ZC	00002	ACONV 2	TEST SHIP
ZB	00002	DEG 711	SNS SPANISH SHIPS
ZB	00001	DD 853	TNS CAKMAK
ZB	00001	DD 875	BNS MARCILIO DIAS
ZB	00001	DD 887	BNS MARIZ E BARROS
ZA	00002	CV 67	USS KENNEDY JOHN F
ZA	00005	CVN 68	USS NIMITZ
ZA	00003	CVN 69	USS EISENHOWER D D
ZD	00001	CA 73	USS SAINT PAUL
ZA	00002	CG 10	USS ALBANY
ZA	00001	DD 743	USS SOUTHERLAND
ZA	00001	DD 763	USS LAWE WILLIAM C
ZB	00001	DD 782	ROCS CHAO YANG
ZB	00001	DD 783	HNS TOMBAZIS
ZA	00001	DD 784	USS MCKEAN
ZA	00001	DD 785	USS HENDERSON
ZB	00001	DD 786	ROCS KAI YANG
ZB	00001	DD 787	ROCS CHIEN YANG
ZD	00001	DD 788	USS HOLLISTER
ZB	00001	DD 790	ROCS LAO YANG
ZD	00001	DD 806	USS HIGBEE
ZD	00001	DD 808	USS BUCKLEY DENNIS J
ZB	00001	DD 714	EX-DD 714
ZD	00001	DD 715	USS WOOD WILLIAM M
ZB	00001	DD 716	ROPNS TARIQ
ZD	00001	DD 717	USS CHANDLER THEODOR
ZD	00001	DD 718	USS HAHNER
ZB	00001	DD 719	ROPNS TAIMUR
ZA	00002	DDG 34	USS SOMERS
ZA	00001	DD 948	USS MORTON
ZA	00002	DDG 33	USS PARSONS
ZA	00001	DD 950	USS EDWARDS RICHARD
ZA	00002	DDG 18	USS SEMMES
ZB	00002	DD 994	EX-DD 994
ZA	00002	FFG 2	USS RAMSEY
ZA	00002	FFG 3	USS SCHOFIELD
ZA	00002	FFG 4	USS TALBOT
ZA	00002	FFG 5	USS PAGE RICHARD L
ZA	00002	FFG 6	USS FURER
ZA	00001	AGS 29	USNS CHAUVENET
ZA	00001	LSD 36	USS ANCHORAGE
ZD	00001	MSO 423	USS AVENGE
ZA	00001	MSO 433	USS ENGAGE
ZA	00001	MSO 437	USS ENHANCE
ZA	00001	MSO 438	USS ESTEEM
ZA	00001	MSO 441	USS EXULTANT
ZA	00001	MSO 442	USS FEARLESS
ZA	00001	MSO 443	USS FIDELITY
ZA	00001	MSO 446	USS FORTIFY
ZA	00001	MSO 448	USS ILLUSIVE
ZA	00001	MSO 449	USS IMPERVIOUS
ZA	00001	MSO 456	USS INFLICT
ZA	00001	MSO 488	USS CONQUEST
ZA	00001	MSO 490	USS LEADER
ZA	00002	FF 1098	USS GLOVER
ZA	00001	LSD 37	USS PORTLAND
ZA	00001	LSD 38	USS PENSACOLA
ZA	00001	LSD 39	USS MOUNT VERNON

ZA 00001	LSD	40	USS FORT FISHER
ZA 00002	FF	1078	USS JOSEPH HEWES
ZA 00002	FF	1079	USS BOWEN
ZA 00002	FF	1080	USS PAUL
ZA 00002	FF	1081	USS AYLWIN
ZA 00002	FF	1082	USS ELMER MONTGOMERY
ZA 00002	FF	1083	USS COOK
ZA 00002	FF	1084	USS MCCANDLESS
ZA 00002	FF	1085	USS BEARY B DONALD
ZA 00002	FF	1086	USS BREWTON
ZA 00002	FF	1087	USS KIRK
ZA 00002	FF	1088	USS BARBEY
ZA 00002	FF	1089	USS BROWN JESSE L
ZA 00002	FF	1090	USS AINSWORTH
ZA 00002	FF	1091	USS MILLER
ZA 00002	FF	1092	USS HART THOMAS C
ZA 00002	FF	1093	USS CAPODANNO
ZA 00002	FF	1094	USS PHARRIS
ZA 00002	FF	1095	USS TRUETT
ZA 00002	FF	1096	USS VALDEZ
ZA 00002	FF	1097	USS MOINESTER
ZA 00001	AGS	32	USNS HARKNESS
ZA 00001	ASR	21	USS PIGEON
ZA 00001	ASR	22	USS ORTOLAN
ZA 00001	ATS	1	USS EDENTON
ZA 00001	ATS	2	USS BEAUFORT
ZA 00001	ATS	3	USS BRUNSWICK
ZA 00001	AGOR	16	USNS HAYES
ZA 00001	AOR	7	USS ROANOKE
ZA 00001	AGS	34	USNS WYMAN
ZA 00001	AGS	33	USNS WILKES
ZA 00002	CGN	36	USS CALIFORNIA
ZA 00001	LHA	1	USS TARAWA
ZA 00002	DD	963	USS SPRUANCE
ZA 00002	DD	964	USS PAUL F FOSTER
ZA 00002	DD	965	USS KINKAID
ZA 00002	DD	966	USS HEWITT
ZA 00002	DD	967	USS ELLIOT
ZA 00002	DD	968	USS ARTHUR W RADFORD
ZA 00002	DD	969	USS PETERSON
ZA 00002	DD	970	USS CARON
ZA 00002	DD	971	USS DAVID R RAY
ZA 00002	DD	972	USS OLDENDORF
ZA 00002	DD	973	USS JOHN YOUNG
ZA 00002	DD	974	USS COMTE DE GRASSE
ZA 00002	DD	975	USS O BRIEN
ZA 00002	DD	976	USS MERRILL
ZA 00002	CGN	40	USS MISSISSIPPI
ZA 00001	LHA	2	USS SAIPAN
ZA 00002	CGN	37	USS SOUTH CAROLINA
ZA 00002	CGN	38	USS VIRGINIA
ZA 00002	CGN	39	USS TEXAS
ZA 00001	PHM	1	USS PEGASUS
ZA 00001	LHA	4	USS NASSAU
ZA 00001	FFG	7	USS OLIVER H PERRY
ZA 00001	DD	817	USS CORRY
ZB 00001	DD	818	ROK TAEJON
ZB 00001	DD	819	EX-USS HOLDER
ZD 00001	DD	820	USS RICH
ZA 00001	DD	822	USS MCCARD ROBERT H
ZD 00001	DD	824	USS BASILONE
ZA 00001	DD	825	USS CARPENTER
ZD 00001	DD	826	EX-USS AGERHOLM
ZA 00001	DD	827	USS OWENS ROBERT A
ZD 00001	DD	829	USS FOX MYLES C
ZB 00001	DD	832	ROCS LIAO YANG
ZB 00001	DD	833	ROCS HAN YANG
ZD 00001	DD	835	USS CECIL CHARLES P
ZD 00001	DD	836	USS MACKENZIE GEORGE
ZB 00003	DD	837	ROCS TE YANG
ZB 00001	DD	839	ROCS SHEN YANG
ZA 00001	DD	842	USS FISKE
ZD 00001	DD	844	USS PERRY
ZD 00001	DD	845	USS BAUSELL
ZD 00001	DD	846	USS OZBOURN
ZD 00001	DD	847	USS WILSON ROBERT L
ZB 00001	DD	849	ROK KWANG JU
ZD 00001	DD	850	USS KENNEDY JOSEPH P

ZB	00001	DD	851	RHN KOUNTOURIOTIS
ZB	00001	DD	852	EX-USS MASON LEONARD
ZA	00001	DD	862	USS VOGELGESANG
ZA	00001	DD	863	USS STEINAKER
ZD	00001	DD	864	USS ELLISON HAROLD J
ZD	00001	DD	865	USS WARE CHARLES R
ZA	00001	DD	866	USS CONE
ZD	00001	DD	867	USS STRIBLING
ZB	00001	LSTS	1	LANDBASEDTESTSITE FL
ZD	00001	DD	871	USS DAMATO
ZD	00001	DD	873	USS HAWKINS
ZA	00001	DD	876	USS ROGERS
ZD	00001	DD	878	USS VESOLE
ZA	00001	DD	880	USS DYESS
ZD	00001	DD	881	USS BORDELON
ZA	00001	DD	883	USS PERRY NEWMAN K
ZD	00001	DD	884	USS PARKS FLOYD B
ZD	00001	DD	885	USS CRAIG JOHN R
ZA	00001	DD	886	USS ORLECK
ZD	00001	DD	890	USS MEREDITH
ZA	00002	DDG	32	USS JONES JOHN PAUL
ZA	00001	DD	933	USS BARRY
ZA	00002	DDG	31	USS DECATUR
ZA	00001	DD	937	USS DAVIS
ZA	00001	DD	938	USS INGRAM JONAS
ZA	00001	DD	940	USS MANLEY
ZA	00001	DD	941	USS DU PONT
ZA	00001	DD	943	USS BLANDY
ZD	00002	DDG	35	USS MITSCHER
ZD	00002	DDG	36	USS MCCAIN JOHN S
ZA	00002	DDG	37	USS FARRAGUT
ZA	00002	DDG	38	USS LUCE
ZA	00002	DDG	39	USS MACDONOUGH
ZA	00002	DDG	40	USS COONTZ
ZA	00002	DDG	41	USS KING
ZA	00002	DDG	42	USS MAHAN
ZA	00002	DDG	43	USS DAHLGREN
ZA	00002	DDG	44	USS PRATT WILLIAM V
ZA	00002	DDG	45	USS DEWEY
ZA	00002	DDG	46	USS PREBLE
ZA	00002	CG	17	USS YARNELL HARRY E
ZA	00002	CG	18	USS WORDEN
ZA	00002	CG	19	USS DALE
ZA	00002	CG	20	USS TURNER RICHMOND
ZA	00002	CG	21	USS GRIDLEY
ZA	00002	CG	22	USS ENGLAND
ZA	00002	CG	23	USS HALSEY
ZA	00002	CG	24	USS REEVES
ZA	00002	CGN	25	USS BAINBRIDGE
ZD	00002	CG	26	USS BELKNAP
ZA	00002	CG	27	USS DANIELS JOSEPHUS
ZA	00002	CG	28	USS WAINWRIGHT
ZA	00002	CG	29	USS JOUETT
ZA	00002	CG	30	USS HORNE
ZA	00002	CG	31	USS STERETT
ZA	00002	CG	32	USS STANDLEY WILLIAM
ZA	00002	CG	33	USS FOX
ZA	00002	CG	34	USS BIDDLE
ZA	00001	CGN	35	USS TRUXTUN
ZA	00002	FF	1040	USS GARCIA
ZA	00002	FF	1041	USS BRADLEY
ZA	00002	FF	1043	USS MCDONNELL EDWARD
ZA	00002	FF	1044	USS BRUMBY
ZA	00002	FF	1045	USS DAVIDSON
ZA	00002	FF	1047	USS VOGE
ZA	00002	FF	1048	USS SAMPLE
ZA	00002	FF	1049	USS KOELSCH
ZA	00002	FF	1050	USS DAVID ALBERT
ZA	00002	FF	1051	USS O CALLAHAN
ZA	00002	FF	1052	USS KNOX
ZA	00002	FF	1053	USS ROARK
ZA	00002	FF	1054	USS GRAY
ZA	00002	FF	1055	USS HEPBURN
ZA	00002	FF	1056	USS CONNOLE
ZA	00002	FF	1057	USS RATHBURNE
ZA	00002	FF	1058	USS MEYERKORD
ZA	00002	FF	1059	USS SIMS W S

ZA	00002	FF	1060	USS LANG
ZA	00002	FF	1061	USS PATTERSON
ZA	00002	FF	1062	USS WHIPPLE
ZA	00002	FF	1063	USS REASONER
ZA	00002	FF	1064	USS LOCKWOOD
ZA	00002	FF	1065	USS STEIN
ZA	00002	FF	1066	USS SHIELDS MARVIN
ZA	00002	FF	1067	USS FRANCIS HAMMOND
ZA	00002	FF	1068	USS VREELAND
ZA	00002	FF	1069	USS BAGLEY
ZA	00002	FF	1070	USS DOWNES
ZA	00002	FF	1071	USS BADGER
ZA	00002	FF	1072	USS BLAKELY
ZA	00002	FF	1073	USS ROBERT E PEARY
ZA	00002	FF	1074	USS HOLT HAROLD E
ZA	00002	FF	1075	USS TRIPPE
ZA	00002	FF	1076	USS FANNING
ZA	00002	FF	1077	USS OUELLET
ZB	00002	DDG	25	HMA PERTH
ZB	00002	DDG	26	HMA HOBART
ZB	00002	DDG	27	HMA BRISBANE
ZB	00002	DDG	28	FRGS LUTJENS
ZB	00002	DDG	29	FRGS MOLDERS
ZB	00002	DDG	30	FRGS ROMMEL
ZB	00002	DEG	7	SNS BALEARES
ZB	00002	DEG	8	SNS ANDALUCIA
ZB	00002	DEG	9	SNS CATALUNA
ZB	00002	DEG	10	SNS ASTURIAS
ZB	00002	DEG	11	SNS EXTRAMADURA
ZB	00001	DD	872	TNS ADATEPE
ZA	00002	DD	977	USS BRISCOE
ZA	00002	DD	978	USS STUMP
ZA	00002	DD	979	USS CONOLLY
ZA	00002	DD	980	USS MOOSBRUGGER
ZA	00002	DD	981	USS JOHN HANCOCK
ZA	00002	DD	982	USS NICHOLSON
ZA	00001	LHA	3	USS BELLEAU WOOD
ZA	00000	CVN	70	USS CARL VINSON
ZA	00001	AS	39	USS EMORY S LAND
ZA	00001	AS	40	USS FRANK CABLE
ZA	00001	AD	41	USS YELLOWSTONE
ZA	00001	AD	42	USS ACADIA
ZA	00002	CGN	41	USS ARKANSAS
ZA	00001	DD	942	USS BIGELOW
ZA	00002	DD	983	USS JOHN RODGERS
ZA	00002	DD	984	USS LEFTWICH
ZA	00002	DD	985	USS CUSHING
ZA	00002	DD	986	USS HARRY W HILL
ZA	00002	DD	987	USS O BANNON
ZA	00001	AO	177	AO 177
ZA	00001	AO	178	AO 178
ZA	00001	AO	179	AO 179
ZB	00002	DD	993	EX-DD 993
ZA	00002	DD	988	USS THORN
ZA	00002	DD	989	USS DEYO
ZA	00002	DD	990	USS INGERSOLL
ZA	00002	DD	991	USS FIFE
ZA	00002	DD	992	USS FLETCHER
ZA	00001	PHM	2	USS HERCULES
ZA	00001	PHM	3	PHM 3
ZA	00001	PHM	4	PHM 4
ZA	00001	PHM	5	PHM 5
ZA	00001	PHM	6	PHM 6
ZA	00001	LHA	5	USS PELELIU
ZB	00001	PGG	511	PGG 511 AS&SIDDIQ
ZB	00001	PGG	513	PGG 513 AL&FAROUQ
ZB	00001	PGG	515	PGG 515 ABDUL&AZIZ
ZB	00001	PGG	517	PGG 517 FAISAL
ZB	00001	PGG	519	PGG 519 KHALID
ZB	00001	PGG	521	PGG 521 AMIR
ZB	00001	PGG	523	PGG 523 TARIQ
ZB	00001	PGG	525	PGG 525 OQBAH
ZB	00001	PGG	527	PGG 527 ABU OBAIDAH
ZB	00001	PCG	612	RSNS BADR
ZB	00001	PCG	614	RSNS AL-YARMOOK
ZB	00001	PCG	616	RSNS HITTEEN
ZB	00001	PCG	618	RSNS TABUK
ZB	00002	DD	995	EX-DD 995
ZA	00001	AO	180	AO 180
ZA	00001	AO	186	AO 186

Summary data

	AC	QPA
ZA	0210	00347
ZB	0057	00072
ZC	0002	00004
ZD	0032	00035
TOTAL	0301	00458

Wind Direction and Speed Indicator, Type F/60
NSN 4A 6660 00-447-1932
APL 381510070

AC	QPA	Ship Hull No.	and Name
ZC	00002	AFDM 7	AFDM 7
ZB	00006	DD 994	EX-DD 994
ZD	00001	ARS 6	USS ESCAPE
ZA	00001	ARS 8	USS PRESERVER
ZD	00001	ARS 23	USS DELIVER
ZD	00001	ARS 25	USS SAFEGUARD
ZA	00001	ARS 41	USS OPPORTUNE
ZA	00001	ARS 42	USS RECLAIMER
ZD	00002	LSD 20	USS DONNER
ZD	00001	LSD 26	USS TORTUGA
ZA	00001	LSD 35	USS MONTICELLO
ZA	00017	CVN 68	USS NIMITZ
ZA	00017	CVN 69	USS EISENHOWER D D
ZD	00002	CA 73	USS SAINT PAUL
ZD	00001	AR 22	USS KLONDIKE
ZA	00001	FFG 1	USS BROOKE
ZA	00001	FFG 3	USS SCHOFIELD
ZA	00001	FFG 5	USS PAGE RICHARD L
ZD	00004	LCC 16	USS POCONO
ZC	00002	ARDM 1	USS OAK RIDGE
ZA	00003	FF 1056	USS CONNOLE
ZA	00001	ATF 105	USS MOCTOBI
ZB	00001	ATF 101	EX-ATF 101
ZA	00001	ATF 113	USS TAKELMA
ZA	00001	ATF 110	USS QUAPAW
ZB	00001	ATF 156	ARAS LUISENO
ZB	00001	ATF 161	EX-ATF 161
ZA	00001	ATF 159	USS PAIUTE
ZA	00001	ATF 160	USS PAPAGO
ZD	00003	MSO 423	USS AVENGE
ZA	00003	MSO 433	USS ENGAGE
ZA	00004	MSO 437	USS ENHANCE
ZA	00004	MSO 438	USS ESTEEM
ZA	00003	MSO 441	USS EXULTANT
ZA	00003	MSO 442	USS FEARLESS
ZA	00003	MSO 443	USS FIDELITY
ZA	00003	MSO 446	USS FORTIFY
ZA	00004	MSO 448	USS ILLUSIVE
ZA	00003	MSO 449	USS IMPERVIOUS
ZA	00003	MSO 456	USS INFLICT
ZD	00001	ATA 185	USS KOKA
ZA	00004	MSO 488	USS CONQUEST
ZA	00004	MSO 490	USS LEADER
ZD	00001	AE 12	USS WRANGELL
ZD	00001	ARG 3	ARG 0003
ZB	00001	ARG 4	ROCS TIEN TAI
7	00003	AR 23	USS MARKAB
ZA	00001	LCC 20	USS MOUNT WHITNEY
ZA	00006	LSD 40	USS FORT FISHER
ZA	00001	FF 1087	USS KIRK
ZA	00003	ASR 21	USS PIGEON
ZA	00003	ASR 22	USS ORTOLAN
ZA	00002	ATS 1	USS EDENTON
ZA	00002	ATS 2	USS BEAUFORT
ZA	00002	ATS 3	USS BRUNSWICK
ZA	00006	AGOR 16	USNS HAYES
ZA	00003	AOR 7	USS ROANOKE
ZA	00004	AGS 33	USNS WILKES
ZA	00004	AGS 34	USNS WYMAN
ZA	00007	CGN 36	USS CALIFORNIA
ZA	00011	LHA 1	USS TARAWA
ZA	00006	DD 963	USS SPRUANCE
ZA	00006	DD 964	USS PAUL F FOSTER
ZA	00006	DD 965	USS KINKAID
ZA	00006	DD 966	USS HEWITT
ZA	00006	DD 967	USS ELLIOT

ZA	00006	DD	968	USS ARTHUR W RADFORD
ZA	00006	DD	969	USS PETERSON
ZA	00006	DD	970	USS CARON
ZA	00006	DD	971	USS DAVID R RAY
ZA	00006	DD	972	USS OLDENDORF
ZA	00006	DD	973	USS JOHN YOUNG
ZA	00006	DD	974	USS COMTE DE GRASSE
ZA	00006	DD	975	USS O BRIEN
ZA	00006	DD	976	USS MERRILL
ZA	00003	CGN	40	USS MISSISSIPPI
ZA	00011	LHA	2	USS SAIPAN
ZA	00007	CGN	37	USS SOUTH CAROLINA
ZA	00003	CGN	38	USS VIRGINIA
ZA	00003	CGN	39	USS TEXAS
ZA	00002	PHM	1	USS PEGASUS
ZA	00012	LHA	4	USS NASSAU
ZA	00004	FFG	7	USS OLIVER H PERRY
ZA	00002	DDG	41	USS KING
ZA	00007	CGN	25	USS BAINBRIDGE
ZA	00001	FF	1047	USS VOGE
ZA	00001	FF	1049	USS KOELSCH
ZA	00001	FF	1054	USS GRAY
ZA	00001	FF	1065	USS STEIN
ZA	00001	FF	1068	USS VREELAND
ZA	00001	FF	1077	USS OUELLET
ZD	00003	LSD	14	USS RUSHMORE
ZD	00001	AGEH	1	USS PLAINVIEW
ZB	00002	DD	472	BNS PARA
ZB	00002	TKDE	1	TURKISH NAVY
ZB	00002	PF	107	RTNS TAPI
ZB	00002	PF	108	RTNS KRIRIRAT
ZB	00002	TKDE	2	TNS TURKISH DESTROYE
ZA	00004	WAGB	10	USCG POLOR STAR
ZA	00001	ASR	13	USS KITTIWAKE
ZA	00001	FF	1078	USS JOSEPH HEWES
ZC	00004	AFDB	7	USS LOS ALAMOS
ZA	00004	AS	39	USS EMORY S LAND
ZA	00004	AS	40	USS FRANK CABLE
ZA	00002	FF	1058	USS MEYERKORD
ZA	00001	FF	1081	USS SYLVAIN
ZA	00006	DD	977	USS BRISCOE
ZA	00006	DD	978	USS STUMP
ZA	00006	DD	979	USS CONOLLY
ZA	00006	DD	980	USS HOOSBRUGGER
ZA	00006	DD	981	USS JOHN HANCOCK
ZA	00006	DD	982	USS NICHOLSON
ZA	00012	LHA	3	USS BELLEAU WOOD
ZA	00003	WHEC	726	USCG MIDGETT
ZA	00001	FF	1061	USS PATTERSON
ZA	00002	AO	177	AO 177
ZA	00001	AO	178	AO 178
ZA	00001	AO	179	AO 179
ZA	00002	FF	1069	USS BAGLEY
ZA	00001	FF	1074	USS HOLT HAROLD E
ZA	00005	WAGB	11	USCG POLOR SEA
ZA	00003	FF	1090	USS AINSWORTH
ZA	00001	FF	1070	USS DOWNES
ZA	00002	FF	1080	USS PAUL
ZA	00003	WHEC	722	USCG MORGENTHAU
ZA	00001	ASR	14	USS PETREL
ZA	00002	FF	1082	USS ELMER MONTGOMERY
ZB	00001	LBTS	1	LANDBASEDTESTSITE FL
ZA	00001	FFG	2	USS RAMSEY
ZA	00001	FFG	4	USS TALBOT
ZA	00004	CGN	41	USS ARKANSAS
ZA	00002	FF	1092	USS HART THOMAS C
ZA	00006	DD	983	USS JOHN RODGERS
ZA	00006	DD	984	USS LEFTWICH
ZA	00006	DD	985	USS CUSHING
ZA	00006	DD	986	USS HARRY W HILL
ZA	00006	DD	987	USS O BANNON
ZB	00013	ATFG	1	NSCSYDNEY FFG COSMAL
ZA	00004	FFG	17	FFG 17
ZA	00001	FF	1084	USS MCCANDLESS
ZA	00004	FFG	8	USS MCINERNEY
ZA	00005	AD	42	USS ACADIA
ZA	00001	FF	1095	USS TRUETT

ZB	00006	DD	993	EX-DD 993
ZA	00006	DD	988	USS THORN
ZA	00006	DD	989	USS DEYO
ZA	00006	DD	990	USS INGERSOLL
ZA	00006	DD	991	USS FIFE
ZA	00006	DD	992	USS FLETCHER
ZA	00001	LCC	19	USS BLUERIDGE
ZA	00002	PHM	2	USS HERCULES
ZA	00002	PHM	3	PHM 3
ZA	00002	PHM	4	PHM 4
ZA	00002	PHM	5	PHM 5
ZA	00002	PHM	6	PHM 6
ZA	00004	FFG	12	USS GEORGE PHILIP
ZA	00004	FFG	14	USS JOHN H SIDES
ZA	00004	FFG	9	USS WADSWORTH
ZA	00001	CG	24	USS REEVES
ZA	00012	LHA	5	USS PELELIU
ZA	00003	FFG	18	FFG 18
ZA	00001	FF	1088	USS BARBEY
ZA	00001	FF	1093	USS CAPODANNO
ZA	00001	CG	32	USS STANDLEY WILLIAM
ZA	00001	FF	1055	USS HEPBURN
ZA	00003	FFG	10	USS DUNCAN
ZA	00001	FF	1083	USS COOK
ZA	00001	FF	1059	USS SIMS W S
ZA	00001	FF	1072	USS BLAKELY
ZB	00001	PGG	511	PGG 511 AS&SIDDIQ
ZB	00001	PGG	513	PGG 513 AL&FAROUQ
ZB	00001	PGG	515	PGG 515 ABDUL&AZIZ
ZB	00001	PGG	517	PGG 517 FAISAL
ZB	00001	PGG	519	PGG 519 KHALID
ZB	00001	PGG	521	PGG 521 AMIR
ZB	00001	PGG	523	PGG 523 TARIQ
ZB	00001	PGG	525	PGG 525 OOBAH
ZB	00001	PGG	527	PGG 527 ABU OBAIDAH
ZA	00001	CG	28	USS WAINWRIGHT
ZA	00001	CG	31	USS STERETT
ZA	00002	LST	1181	USS SUMTER
ZA	00001	CG	22	USS ENGLAND
ZB	00001	CG	26	USS BELKNAP
ZA	00001	CG	27	USS DANIELS JOSEPHUS
ZA	00002	FF	1066	USS SHIELDS MARVIN
ZA	00002	AO	180	AO 180
ZA	00002	AO	186	AO 186
ZA	00001	FF	1064	USS LOCKWOOD
ZA	00001	LSD	37	USS PORTLAND
ZA	00004	AS	41	USS MCKEE
ZA	00004	AD	41	USS YELLOWSTONE
ZA	00001	FF	1097	USS MOINESTER
ZA	00002	AFS	6	USS SAN DIEGO
ZA	00002	FFG	1	USS CLARK
ZA	00002	FFG	13	FFG 13
ZA	00002	FFG	15	FFG 15
ZA	00002	FFG	16	FFG 16
ZB	00002	PCG	612	RSNS BADR
ZB	00002	PCG	614	RSNS AL-YARMOOK
ZB	00002	PCG	616	RSNS HITTEEN
ZB	00002	PCG	618	RSNS TABUK
ZB	00006	DD	995	EX-DD 995

Summary data

	AC	QPA
ZA	0156	00547
	0027	00063
	0003	00008
ZB	0016	00027
TOTAL	0202	00645

APPENDIX C

SUPPORT EQUIPMENT REQUIREMENTS

MAINTENANCE PLAN

GSE REQUIREMENTS

Wind Measuring and Indicating System

Designation/Nomenclature

NAEC 002-80

Maintenance Plan Number

GSE Nomenclature	NSN/Part Number/Model	FSCM Code	Remarks
Built-in Test Unit, Wind Measuring and Indicating System (1)	TBD (NAEC development)		See Figure T1-1
Portable Test Unit, Wind Measuring and Indicating System (2)	TBD (NAEC development)		See Figure T1-2

Notes (1) Selected major combatant ships will be equipped with a built-in test unit which will provide for functional check of the wind measuring and indicating system. The unit will also contain differential synchros to compensate for wind direction error of individual detector installations. Repair of the built-in-test unit will be accomplished at intermediate maintenance activities or the depot.

(2) The wind measuring and indicating system will be functionally checked on ships not equipped with built-in test using portable test units prepositioned at designated Naval bases.

Table Number	Applicable to:
1	Nomenclature Overall System Functional Check EIC/ID LH07 SM&R

Wind Measuring and Indicating System

Designation/Nomenclature

MAINTENANCE PLAN

GSE REQUIREMENTS

NAEC 002-80

Maintenance Plan Number

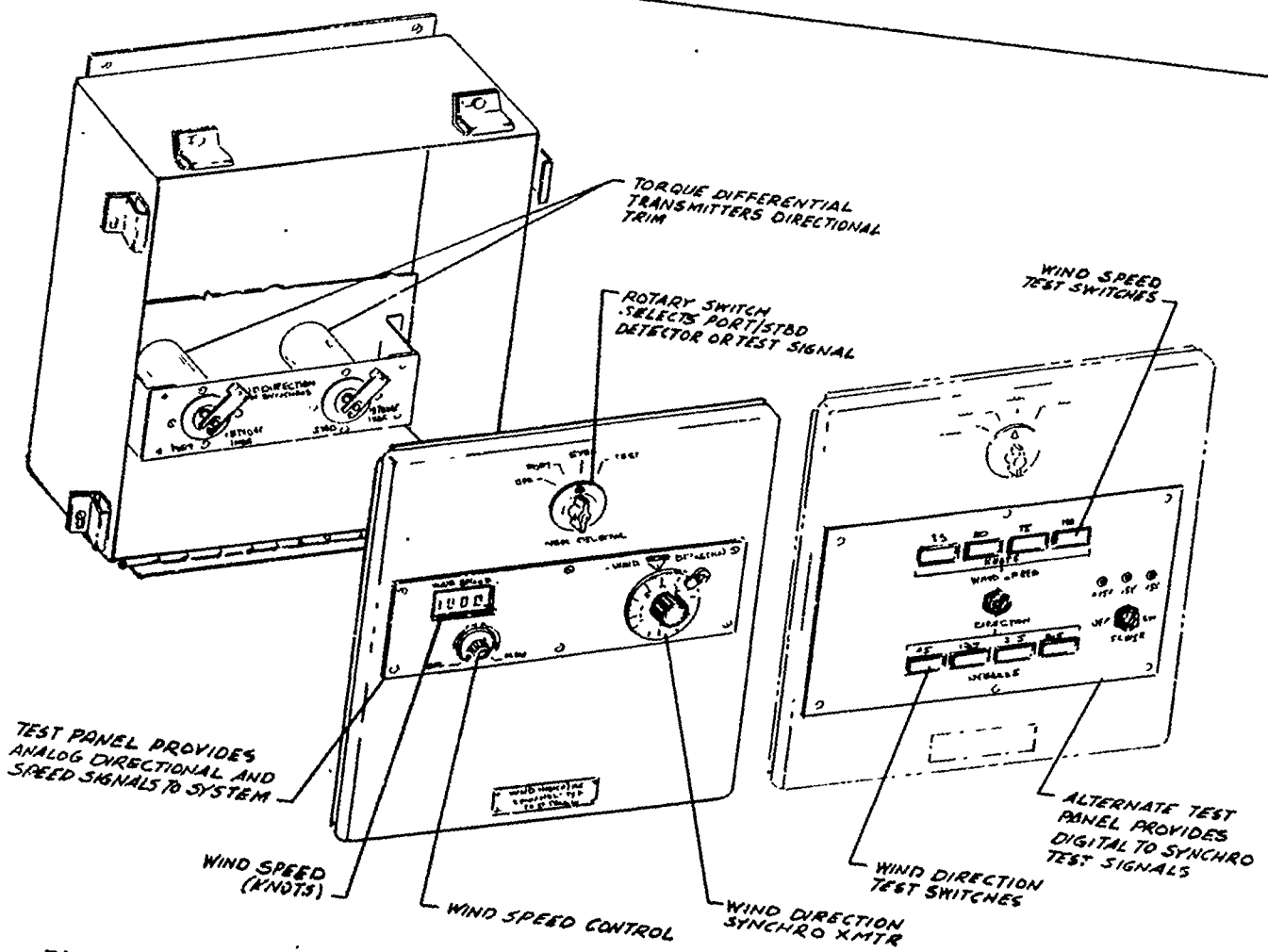


Figure T1-1. BUILT-IN TEST UNIT, WIND MEASURING AND INDICATING SYSTEM

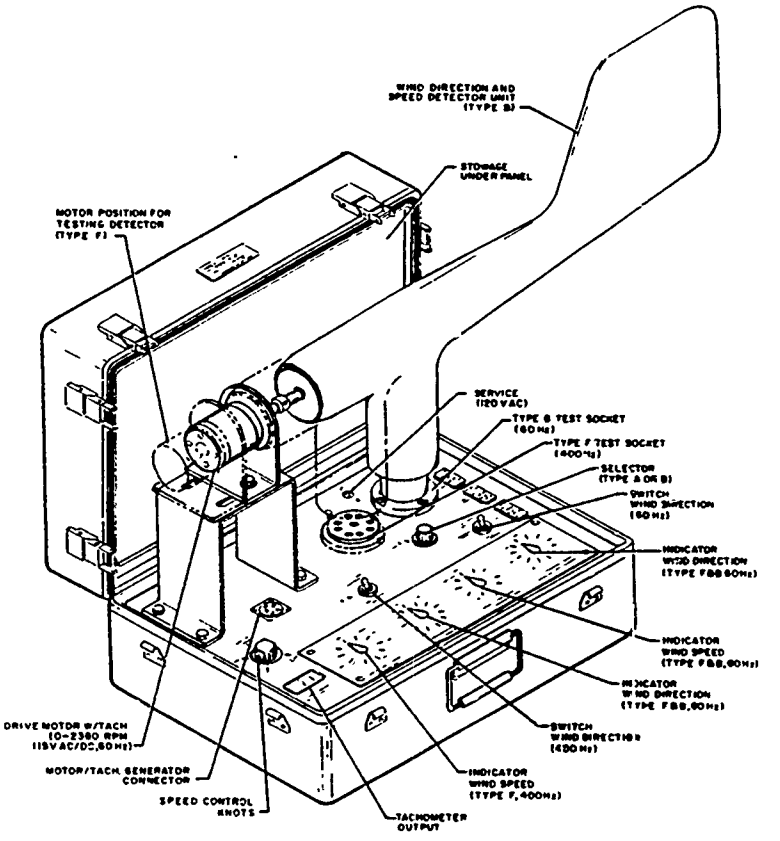


Figure T1-2. PORTABLE TEST UNIT, WIND MEASURING AND INDICATING SYSTEM

MAINTENANCE PLAN

GSE REQUIREMENTS

Wind Measuring and Indicating System

Designation/Nomenclature

NAEC 002-80

Maintenance Plan Number

GSE Nomenclature	NSN/Part Number/Model	FSCM Code	Remarks
Multimeter	AN/PSM-4		Or Equivalent (SCAT 4245)
Voltmeter, Digital	HP-3440A		Or Equivalent (SCAT 4211)
Synchro Tester, 60 Hz	Mk 2, All Mods		Type B and F Equipment
Synchro Tester, 400 Hz	Mk 30, All Mods		Type F Equipment
Safety Harness, Parachute-Type	2220		For Removal of Detector
Common Hand Tools and Materials			See Applicable MRC

Notes

Table Number	Applicable to:
2	Nomenclature Scheduled Maintenance of System Units EIC/ID LH07 SM&R

MAINTENANCE PLAN
GSE REQUIREMENTS

Wind Measuring and Indicating System
Designation/Nomenclature

NAEC 002-80
Maintenance Plan Number

GSE Nomenclature	NSN/Part Number/Model	FSCM Code	Remarks
Built-in Test Unit, Wind Measuring and Indicating System, or	TBD (NAEC development)		See Figure T1-1
Portable Test Unit, Wind Measuring and Indicating System, or	TBD (NAEC development)		See Figure T1-2
Test Set, Wind Indicating Equipment, Type Band F, or	76585-1	23667	
Synchro Tester, 60 Hz	Mk 2, All Mods		Type B and F Equipment
Synchro Tester, 400 Hz	Mk 30, All Mods		Type F Equipment
Multimeter	AN/PSM-4		Or Equivalent (SCAT 4245)
Common Hand Tools			

Notes

Table Number 3	**Applicable to:**
	Nomenclature System Fault Isolation (Organizational) **EIC/ID** LH07 **SM&R**

MAINTENANCE PLAN

GSE REQUIREMENTS

Wind Measuring and Indicating System

Designation/Nomenclature

NAEC 002-80

Maintenance Plan Number

GSE Nomenclature	NSN/Part Number/Model	FSCM Code	Remarks
Portable Test Unit, Wind Measuring and Indicating System, or	TBD (NAEC) development)		See Figure T1-2
Test Set, Wind Indicating Equipment, Type B and F	76585-1	23667	
Multimeter	AN/PSM-4		Or Equivalent (SCAT 4245)
Voltmeter, Digital (1)	HP-3440A		Or Equivalent (SCAT 4211)
Synchro Tester, 60 Hz	Mk 2, All Mods		Type B and F Equipment
Synchro Tester, 400 Hz	Mk 30, All Mods		Type F Equipment
Common Hand Tools			

Notes

(1) The digital voltmeter is required for the crosswind/headwind computer unit only.

Table Number	Applicable to:
4	Nomenclature: Unit Fault Isolation (Organizational) EIC/ID: LH07 SM&R:

MAINTENANCE PLAN
GSE REQUIREMENTS

Wind Measuring and Indicating System
Designation/Nomenclature

NAEC 002-80
Maintenance Plan Number

GSE Nomenclature	NSN/Part Number/Model	FSCM Code	Remarks
Test Bench Installation (1) General Purpose Electronic Test Equipment (GPETE) Common Hand Tools	TBD (NAEC development)		See Figure T5-1

Notes (1) The test bench installation will include mounting bases, alignment fixtures, interconnecting cabling, standard synchros and indicators, variable speed motors and synchros, shaft torque measurement equipment, switching and power circuits, and all equipment necessary to provide an overall test and repair capability for the wind measuring and indicating system.

Table Number	Applicable to:
5	Nomenclature Unit Repair (Intermediate and Depot) EIC/ID LH07 SM&R

Wind Measuring and Indicating System
Designation/Nomenclature

NAEC 002-80
Maintenance Plan Number

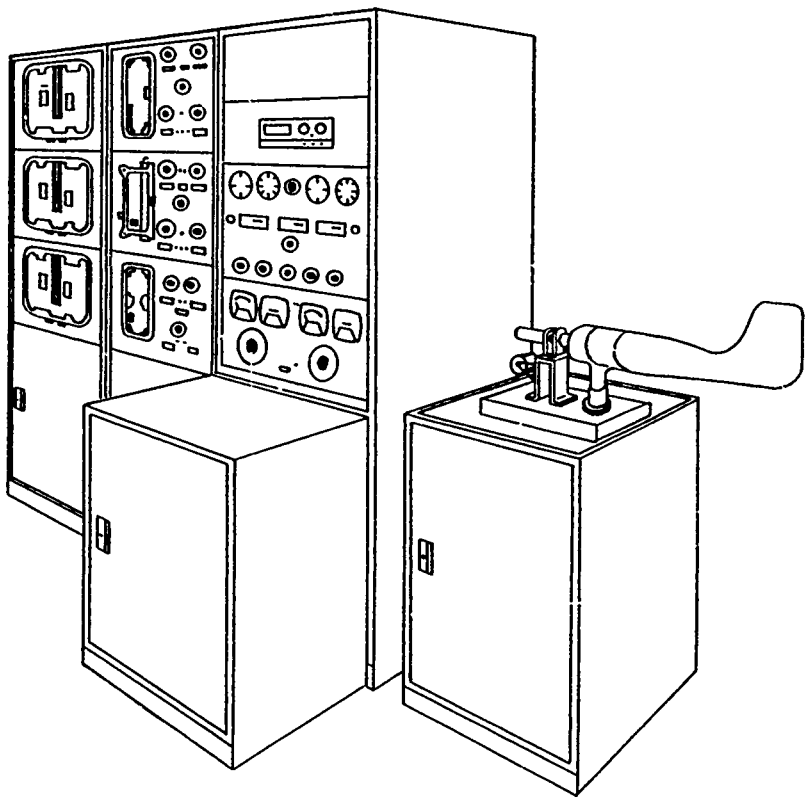


Figure T5-1. TEST BENCH INSTALLATION, WIND MEASURING AND INDICATING SYSTEM

APPENDIX D

MAINTENANCE PHILOSOPHY

1. General

Wind measuring and indicating equipment is used on all Navy ships to provide continuous indications of wind direction and speed. The resulting output wind data are vital to ship navigation, weapon launch systems, and aircraft operations; and loss or errors in these wind data can have serious consequences. Several accidents and near accidents involving aircraft have been, in part, attributed to problems associated with the wind measuring and indicating equipment. Some of these problems appear to be the result of in-service maintenance and support deficiencies. It is the intent of the Naval Air Engineering Center to minimize these maintenance and support problems by restructuring the maintenance philosophy associated with these equipment so that fault isolation is improved and operating personnel can have assurance that the equipment is properly functioning and calibrated.

The maintenance and support concepts resulting from this maintenance plan will not necessitate significant changes from the current maintenance philosophy. Maintenance practices will generally remain in accordance with the policies set forth in OPNAVINST 4790.4, COMNAVSURFPACINST 4700.1 and COMNAVSURFLATNINST 9000.1.

The following paragraphs identify the maintenance and support pactices for subassemblies, assemblies and units comprising the wind measuring and indicating system as a function of the level of maintenance.

2. Organizational-Level Maintenance

Organizational-level maintenance includes all scheduled and corrective maintenance activities performed aboard a ship by the ship's personnel. Organizational-level maintenance of the wind measuring and indicating system will be accomplished by ship's company rated as Interior Communications Electricians (IC) on all classes of ships.

2.1 Scheduled Maintenance

Scheduled or planned maintenance actions at the organizational level will be performed in accordance with the applicable Maintenance Index Page (MIP) and Maintenance Requirement Card (MRC). Scheduled maintenance activities will include cleaning, inspection, lubrication, alignment and adjustment, and operational and functional testing of units making up the wind measuring system. The most recent MIP and MRC control numbers for specific scheduled maintenance activities on wind measuring units and the required intervals are as follows:

Detector; Clean, Inspect, and Lubricate
MIP: IC-6/45-59; MRC: 87 3STH N; dated August 1977
Interval: Semi-annual

Transmitter; Clean, Inspect, and Lubricate
MIP: IC-6/145-59; MRC: 65 2UEK N; dated June 1975
Interval: Semi-annual

Indicator; Clean and Inspect
MIP: IC-6/172-47; MRC: 47 3NMQ N; dated April 1977
Interval: Annual

Crosswind/Headwind Computer; Clean, Inspect, and Lubricate
MIP: IC-6/134-28; MRC: A1 1EJP S; dated October 1971
Interval: Semi-annual

Crosswind/Headwind Indicator; Clean, Inspect, and Lubricate
MIP: IC-6/134-28; MRC: 28 3VRY Y; dated February 1978
Interval: Semi-annual

Recorder; Clean, Inspect, and Lubricate
MIP: IC-6/172-47; MRC: 63 1NSY N; dated June 1973
Interval: Quarterly

System; Port and Starboard Detector Comparison Check
MIP: IC-6/145-59; MRC: 65 2UEL N; dated June 1975
Interval: Semi-annual

Built-In Test; System Functional Check
Interval: As Required

Selected major combatant ships will be equipped with a built-in test unit which will provide for functional check of the wind measuring and indicating system. The built-in test unit will provide standard wind direction signals that will give operating personnel a "push-to test" capability increasing their confidence in the system by enabling them to quickly detect an error resulting from gradual drift in alignment or adjustment that could otherwise go unnoticed. Also, the built-in-test unit incorporates differential synchros to permit the output of individual detectors to be offset compensating for intrinsic wind error resulting from ship's structure in the area of the detectors.

The wind measuring and indicating system on ships not equipped with built-in test shall be functionally checked using portable test units prepositioned at designated Naval bases.

2.2 Corrective Maintenance

Corrective maintenance at the organizational level consists of operational and functional test, fault isolation, and unit repair by assembly, subassembly, component or piece/part replacement; and assembly repair by subassembly, component, or piece/part replacement. In some instances repair is limited to removal and replacement only. Specific organizational-level corrective maintenance repair activities include the following:

Detector - Organizational repair of both the type B and type F detectors and constituent assemblies is facilitated by component and piece/part replacement, and alignment as required. Spare components and piece/parts provisioned onboard ship are identified in APL 381510034 for the type B detector and

APL 381510065 for the type F detector. In addition, a spare detector unit is provisioned onboard major aviation ships including all CV, LHA, and LPH type ships.

Transmitter - Organizational repiar of both the type B and type F transmitters, and their respective wind direction and wind speed assemblies, is facilitated by subassembly, component, and piece/part removal and replacement, and alignment or adjustment as required. Spare subassemblies, components, and piece/parts provisioned onboard ship are identified in APL 381510035 for the type B transmitter*, and APL 381510066 for the type F transmitter.

The wind speed assembly in both the type B and type F transmitter units, contains a roller-disc integrator subassembly. This subassembly is complex and, based on experience, it is prone to maintenance induced damage. As such, organizational-level maintenance on the integrator is limited to removal and replacement of the subassembly. Corrective maintenance involving disassembly of the roller-disc integrator subassembly will be accomplished at the intermediate maintenance activity or depot. Other subassemblies in the transmitters that are limited to removal and replacement only include the servo-amplifier and magnetic amplifier. The servoamplifier is repaired at the intermediate level and the magnetic amplifier is not repairable since it is encapsulated.

Complete wind direction and wind speed assemblies will be provisioned as spare items on selected major combatant missile firing and aviation capable ships having only single transmitters in their wind measuring and indicating systems.

Indicator - Organizational repair of indicator units is accomplished by component and piece/part replacement, and alignment as required. Spare components, and piece/parts provisioned onboard ship for repair of indicator units are identified by the following APLs:

APL 381510070	Type F/60 Indicator
APL 381510036	Type B Indicator**
APL 381510004	Type B Indicator**

Crosswind/Headwind Computer - Organizational repair of the crosswind/headwind computer is facilitated by subassembly, component, and piece/part removal and replacement, and adjustment or

---

* Spare parts for the older and obsolete type B transmitter identified by NIIN 00-557-3417 are identified in APL 381510002.

** Both type B indicators, NIINs 00-691-1530 and 00-530-0851, are obsolete and if beyond the capability of maintenance replace them with NIIN 00-447-1932, type F/60 indicator.

alignment as required. Spare subassemblies, components, and peice/parts provisioned onboard ship are identified in APL 381510064.

Subassemblies that are limited to removal and replacement only include two servoamplifier subassemblies, and a dc power supply. The servoamplifiers and dc power supply are repaired at the intermediate level.

Crosswind/Headwind Indicator - Organizational repair of the crosswind/headwind indicator is accomplished by component and piece/part removal and replacement. Spare components and piece/parts provisioned onboard ship are identified in APL 381510063.

Wind Direction and Speed Recorder - Organizational repair of the wind direction and speed recorder is facilitated by component, and piece/part removal and replacement, and alignment and adjustment as required. Spare components and piece/parts provisioned onboard ship are identified in APL 381510060.

Detailed corrective maintenance requirements for organizational-level repair of units making up the wind measuring and indicating system are contained in Part III. The support equipment used for organizational-level repair is identified in Appendix C.

3. Intermediate-Level Maintenance

Intermediate-level maintenance of the wind measuring and indicating equipment is performed at shore-based intermediate maintenance activities (SIMAs) and afloat aboard tenders. SIMAs currently responsible for repair of wind measuring and indicating equipment are located at Charleston, South Carolina; Little Creek, Virginia; Mayport, Florida; Pearl Harbor, Hawaii; and San Diego, California. Intermediate maintenance activities are staffed by Navy IC electricians and are authorized to perform all repair tasks necessary to return wind measuring and indicating equipment to a serviceable condition.

Corrective maintenance at the SIMA consists of complete functional test, fault isolation, repair, and alignment and adjustment capabilities for all units, assemblies, and subassemblies making up the wind measuring system. Repair is accomplished to the component or piece/part level by removal and replacement.

Subassemblies and components that are beyond the capability of repair at the organizational level are repaired at the intermediate level by removal and replacement of defective peice/parts. These subassemblies include the roller-disc integrators used in the type B and the type F transmitters, the servoamplifier used in the type B transmitter and crosswind/headwind computer, the dc power supply used in the crosswind/headwind computer, and the crosswind and headwind microammeters used in the crosswind/headwind indicator. Additionally, some minor repairs can be accomplished on components such as synchros and motors; i.e., replacement of brushes, bearings, etc.

To expedite equipment turn-around-time under emergency conditions or facilitate unit repair at times when lengthy piece/part waiting times are encountered, certain assemblies are provisioned in limited quantities for insurance purposes at the SIMAs. These items include the speed mechanism assembly and shaft housing assembly in both the type B and type F detectors, and the wind direction and wind speed assemblies in the type B and type F transmitter units.

Specific corrective maintenance requirements for intermediate-level repair of wind measuring and indicating equipment are contained in Part III. The support equipment used at the SIMA is identified in Appendix C.

Scheduled maintenance of the wind measuring and indicating system is not normally performed at the intermediate maintenance activity although they are authorized to perform those tasks involved with all aspects of scheduled maintenance.

4. Depot-Level Maintenance

Depot-level maintenance of the wind measuring and indicating equipment includes restoring the operating and performance characteristics of the equipment to its original design and technical specifications (Class B repair or overhaul) and calibration of all end items, including units, repairable assemblies, subassemblies, and components coded for depot repair or found to be beyond the capability of intermediate maintenance activities.

Depot calibration consists of adjusting and aligning the wind measuring equipment to standardized specifications so that any unit or plug-in assembly may be integrated into a wind measuring system and operate in an accurate and precise manner without degrading system performance. Depot calibration requires a "hot bench" with units and assemblies of the wind measuring system available and maintained as "secondary standards". Each end item to be repaired and calibrated will be incorporated into the remainder of the system (the "secondary standards") and adjusted and aligned accordingly.

No scheduled maintenance is planned for the depot level, although the depot is authorized to accomplish tasks associated with scheduled maintenance.

Navy depot facilities designated for repair and overhaul of wind measuring and indicating equipment are: Norfolk Naval Shipyard and Long Beach Naval Shipyard.